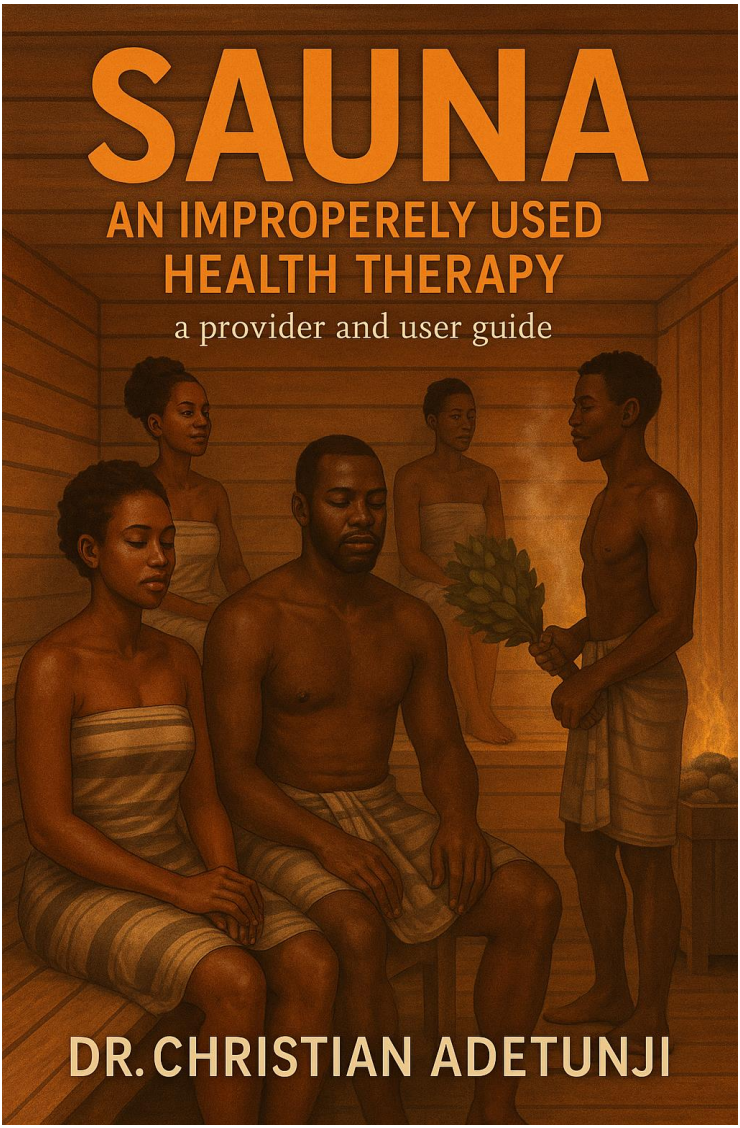
SAUNA
AN IMPROPERELY USED HEALTH THERAPY
a provider and user guide
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An Improperly Used Health Therapy

A Provider and User guide

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DEDICATION

This book is dedicated to:

1. My dear friend and brother, Reverend Godfrey Gatete, through whom I first heard the word "sauna" while in Nairobi, Kenya, and who also hosted me when I came to this great country, Rwanda.
2. Pastor Azariah V W, a kind father figure who took me to the genocide memorial centre, helping me reaffirm I needed to be here to serve humanity.
3. My sister and friend, Margaret Mbabazi, who facilitated my first office and accommodation and offered me her furniture.
4. Lieutenant Patrick Hakizimana, a kind-hearted man who accommodated me for a year without causing me any worry, and
5. Engineer Makinde Akintunde Ezekiel, my man and supporting pillar when things appeared to be greatly disturbing and unstable.

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INTRODUCTION

Traditional saunas, heated with wood or electric stoves, have several health benefits. They benefit cardiovascular health by boosting circulation, decreasing blood pressure, and promoting heart health. They also help with detoxification and encouraging better skin. Saunas also help with muscle rehabilitation and pain alleviation, which reduces joint pain and promotes muscle healing. They also promote stress reduction, mental wellness, immune function, respiratory advantages, improved sleep, and maybe longer life. Saunas' heat and humidity can help clear the airways, improve breathing, and relieve asthma and bronchitis. Regular sauna use has been associated with lower Alzheimer's and dementia risk. This achievement is possible if users use saunas correctly.

However, there are worries regarding the improper use of saunas, as well as caution for a certain group of people who may require the clearance of their medical professionals to avoid complications or death. This book is concerned that the temperature in most saunas is not regulated. This is very dangerous. In addition, the piece has concerns that the poor hygiene in the sauna chamber and its surroundings is a dangerous threat to public health.

This book intends to spark the reader's interest in saunas while also advising sauna providers and

policymakers on how to ensure that consumers benefit from this wonderful, enjoyable and health-promoting intervention.

Chapter ONE

What a News!

There are health benefits of saunas. Yes; sauna bathing may extend healthspan. The heat exposure can improve cardiovascular health by eliciting protective responses similar to those seen during exercise. For example, moderate-temperature sauna bathing can cause an increase in heart rate of up to 100 beats per minute, similar to those seen during moderate-to-vigorous physical exercise (Kukkonen-Harjula et al. 1989). Regular sauna use lowers systolic and diastolic blood pressure (Laukkanen et al., 2018b), increases left ventricular ejection fraction while decreasing left ventricular ejection time, improves arterial compliance (Lee et al., 2018), and enhances flow-mediated dilation, a measure of endothelial function (Ohori et al., 2012).

The piece explores many studies including the one by Kunutsor et al. (2018) which discovered that sauna use may significantly lower the risk of cardiovascular disease-related mortality. Men who used the sauna 2-3 times per

week had a 22% lower risk of sudden cardiac death, a 63% lower risk of deadly coronary heart disease, and a 27% lower risk of death from cardiovascular disease. Longer sauna sessions also had a greater impact in lowering mortality rates. Aerobic exercise mixed with frequent sauna use reduced cardiovascular-related and all-cause mortality.

Furthermore, a study looking at the link between sauna habits and cardiovascular disease mortality in men and women discovered that increasing the frequency and length of sauna bathing was related to a lower risk of fatal cardiovascular disease (CVD) mortality. The study discovered that the risk of CVD mortality dropped proportionally as the number of sauna sessions per week increased, whereas the duration of sauna use was inversely related to CVD mortality (Laukkanen et al., 2018).

Using a sauna regularly has been shown to change serum cholesterol and lipoproteins in healthy people, lowering the amounts of total plasma cholesterol and LDL in the

blood (Gryka et al., 2014;). Sauna use may also be a non-drug way to treat or even avoid high blood pressure since it can lower the risk of getting high blood pressure by making arteries more flexible. 2018;).

A Finnish study indicated that males who used saunas four to seven times per week had a 65% lower risk of getting Alzheimer's disease (Laukkanen et al., 2015b).

Depression is frequently associated with increased inflammatory biomarkers, which can contribute to depressive symptoms and abnormalities in brain and neuroendocrine function. Strategies that activate anti-inflammatory pathways may assist to alleviate depression symptoms. Sauna use has been proven to improve appetite and reduce somatic complaints and anxiety in people suffering from mild depression (Roque et al., 2009; Worthen et al., 2020).

Sauna use is associated with a lower risk of having chronic or acute respiratory infections, including pneumonia (Kunutsor et al., 2017). Men who use saunas 2-3 times per week are 27% less likely to acquire pneumonia than

those who use them only once or never (Kunutsor et al., 2017). Sauna therapy improves respiratory function in males with obstructive pulmonary disease. Sauna bathing also lowers the risk of common colds (Ernst et al., 1990). Sauna use also influences the immune system and heat shock proteins, which play roles in both innate and adaptive immunity.

Physical fitness is critical to human health and mortality. It covers cardiorespiratory fitness, musculoskeletal strength, endurance, flexibility, and body composition. As we age, these characteristics deteriorate, and keeping fit in older persons can improve cognitive function, minimise frailty, and improve quality of life. Heat stress from sauna use may influence fitness gains (Jeoung and Lee, 2015; Navarrete-Villanueva et al., 2021).

However, sauna bathing has been connected to male fertility concerns, with healthy males experiencing lower sperm counts and motility after two 15-minute sessions at 80-90°C over three months (Garolla et al., 2013). These indicators, however, reverted to normal within six

months of discontinuing sauna use. Pregnant women who use saunas at least once a week during their pregnancies have the lowest rate of central nervous system birth abnormalities like anencephaly and spina bifida. A comprehensive assessment of 12 research studies revealed that exercise and passive heat modalities did not raise core body temperatures to teratogenic levels when performed within defined parameters (Ravanelli et al., 2019). Pregnant women with toxaemia should use saunas with caution and consult their doctor before doing so.

A sufficient amount of water and electrolyte balance are essential for maintaining body fluid equilibrium while also increasing muscular contractility and neuronal function. Sweating during a sauna session causes electrolyte loss, which leads to muscle cramps and exhaustion. Sauna users should drink plenty of fluids and eat electrolyte-rich foods after use. Supplements may be required for people who have limited calorie intake or eat low-micronutrient diets.

In addition to these, saunas foster unique social dynamics due to their relaxed and egalitarian nature. Saunas offer various benefits, including casual conversations, deep and meaningful discussions, bonding between friends and family, networking opportunities, and cultural and social rituals. These improve mental well-being, enhancing social bonds, encouraging mindfulness, boosting mood, and promoting openness and trust.

Providers' Responsibilities

It is expedient for the sauna owners to keep it hygienic and disinfected constantly, bearing in mind that keeping a sauna clean and disinfected is critical for the health and safety of users. For instance, there should be a consistent constant, daily, weekly and monthly important actions saunas owners should take. Because they fail to instruct sauna users to shower before using the facility and because they do not forbid users from stepping on benches with their slippers (Wearing slippers on upper benches in a sauna is generally considered unsanitary

and disrespectful to other users. In fact, slippers carry dirt, sweat, and bacteria from the floor, making them unsanitary to place on a bench where others will sit) and because towels are not provided to sit on in the chambers, sweat is lodged in the usually flat benches and on the floor. Users sit on the sweat and can be infected. Therefore, there is a need for periodic mopping of the benches and the floor. What I see owners do is the periodic mopping of the floor outside of the chamber; outside is more significant than inside.

The daily cleaning routine should also include cleaning surfaces with a moderate, non-toxic disinfectant, including benches, walls and door handles. They should avoid using aggressive chemicals that may damage the wood. They should keep floors clean by sweeping and mopping every day to remove dirt and debris. They should use an antibacterial cleaning that is appropriate for the flooring type. After using the sauna, they should open the door to let moisture out and prevent mould growth.

I truly believe that sauna operators should encourage clients to sit on towels. These lowers sweat absorption into the wood. Sweat stains should also be spot cleaned. I mean, if they notice any obvious sweat marks, they should wipe them off right away with a moist cloth. The question is, do the staff come to the chamber except to apply eucalyptus, advertise massage, or scrub? Hmmm. Because some users leave used sliced lime or cream in the chamber, providers should look for garbage or personal objects and remove anything left behind to prevent bacteria growth. They should also do a weekly deep cleaning on the benches, scouring them with warm water, light soap, and a soft brush to remove sweat and debris. They should also sanitise high-touch locations, such as handles, light switches, and control panels, using a sauna-safe disinfectant. They should also clean the sauna stones to remove dust and debris.

Monthly maintenance should include a check for mould and mildew; if mould forms, it should be scrubbed with a solution of water and white vinegar. During this time,

they should lightly sand the benches and flooring to remove deep-seated filth and bacteria. They should also investigate the ventilation system and guarantee proper airflow to maintain the sauna clean and prevent bacteria buildup. I am simply having a sensible thought; if guests must shower before entering and sit on towels while in the chamber, it follows that the sauna proprietors must offer towels. Visit different saunas and check out the state of their towels! All public saunas should be aware that they are in business and supply clean towels while encouraging their use.

In addition to the above-mentioned concerns about regular maintenance, sauna providers must monitor humidity and temperature and service heating systems to avoid mould, germs, or equipment failure. They must also promote safety and inclusion and adhere to sauna building materials, ventilation, emergency procedures, and accessibility. They should set recommendations for pregnant women, children, the elderly, and anyone with medical issues regarding sauna use. They should take

seriously regular staff training to address emergencies and educate users about safe practices. They should position mandatory signs inside saunas which must include time limitations, health warnings, and emergency procedures. They should prepare themselves for periodic inspections and licensing regulations to ensure hygiene, structural integrity, and operational safety, just as promoting responsible sauna use can help achieve public health goals while reducing dangers through adequate regulation and community education.

Sauna owners should also limit the use of oils and lotions inside to avoid residue buildup; after all, using oil and lotion causes more harm than benefit. They may keep their facilities clean, hygienic, and inviting by following these guidelines.

Chapter TWO

What Sauna is

I have had interactive conversations with tens of sauna users' reason they use saunas. While some told me that they feel good after sauna sessions, some simply say it makes them relax, sleep or take their minds off thinking too much. I have also observed that over 70% of couples in all the saunas I have used are there with their side chicks, on whose bodies they lean or massage with cream; they attend sauna for connection beyond enhancement of sleep or muscle relaxation. The scientific truth is that sauna bathing has been shown to have beneficial effects on blood pressure, cardiometabolic biomarkers, arterial compliance, and cardiovascular function. Studies have shown that higher frequency and duration of sauna bathing are related to a lower risk of cardiovascular mortality, stroke, hypertension, pulmonary diseases, and dementia. The feelings of relaxation and mental health promotion associated with sauna sessions may be linked to the increased production

of hormones like endorphins. The beneficial effect of sauna bathing on disease outcomes may be mediated via reduced inflammation.

A review of studies by Kanimozhi et al. (2024) on the effect of sauna baths on blood pressure in normotensive persons discovered that while sauna baths did not significantly improve systolic blood pressure (SBP) fluctuations, they did positively affect diastolic blood pressure (DBP) changes among healthy participants. The study also discovered that sauna baths could help lower noncommunicable diseases, as changing risk factors contributes to more than 70% of cardiovascular diseases worldwide. According to the findings, sauna baths could be a potential way to avoid hypertension and cardiovascular diseases.

Sauna bathing is a potential novel tool to promote public health, but its effectiveness and safety as an additional diaphoretic or diuretic therapy need to be carefully investigated. Overall, sauna bathing is a pleasurable activity with potential health benefits, and it is

recommended as part of a healthy lifestyle for the prevention of chronic diseases.

In this piece, we shall constantly delve into scientific proof in support of sauna use. For instance, Hussain et al. (2019) conducted the first global sauna study, which indicated that relaxation or stress reduction was the most commonly mentioned motive to use a sauna, with most sauna bathers also reporting improvements in sleep lasting 1-2 nights following sauna use. It was also reported that sauna users who bathed 5-15 times per month had comparatively higher mental well-being scores, while many reported saunas bathing for 'detox', which is not yet well understood by the research community, and a few reported sauna bathing for cardiovascular benefits, which is supported by research. Again, Gravel et al. (2021) found that Finnish sauna bathing enhances peripheral flow-mediated dilation (FMD) in middle-aged and older adults with stable coronary artery disease (CAD). Furthermore, in their recent study on the impact of sauna suits on body fluid

loss, body temperature, and energy expenditure in athletes, Park et al. (2025) found that sauna suits are useful instruments for rapid weight loss and performance enhancement in weight-class sports. In addition to these, according to Podstawski et al. (2024) and He et al. (2024), argued that sauna sessions at 80°C and 120°C were found to have significantly decreased systolic blood pressure (SBP), diastolic blood pressure (DBP), body mass, heart rate (HR), and forehead temperature while increasing vigour and decreasing tension, depression, anger, fatigue, and confusion. Sauna bathing at 120°C had opposite effects. Excessive air temperature can induce heat exhaustion and heat stress symptoms, so 80°C sauna bathing is recommended for sporadically used women, while 120°C exposure is not advised.

Furthermore, Boraczyński et al. (2018) found that after a two-part dry sauna intervention, healthy adult males' body mass index (BML) was determined by both body mass index (BM) and body mass index (BSA). Males with higher BM and BSA lost more body fluids, suggesting that

they are more susceptible to dehydration and heat. They should monitor their physique and heart rate more frequently in order to reduce the risk of homeostasis and heart attacks.

Origin of Sauna

The term "sauna" derives from the Finnish language and originally referred to a typical Finnish bathhouse. In its original Finnish connotation, "sauna" refers to a bathhouse or room meant for sweating in dry or wet heat, followed by cooling (typically in water or fresh air) to cleanse the body and rest the mind. In other words, it is a thermal bath, which cleanses through heat and sweat. In a simple term, a sauna is a small chamber or building meant to provide dry or wet heat sessions, which are often followed by cooling off. It is frequently made of wood and includes a heater (electric, wood-burning, or infrared) that enhances the temperature, sometimes with extra humidity from water poured over hot stones. Saunas ariee used for relaxation, detoxification, better

circulation, and many health advantages as we shall unfold in this piece.

The earliest saunas were pit saunas, dug into the ground or built as small log huts. These were heated with stones that were warmed by fire, creating a smoke-filled environment (savusauna or "smoke sauna"). Once the fire was extinguished, the heat remained trapped inside, and bathers would enjoy the warmth. However, saunas spread across Scandinavia, Estonia, Latvia, and Russia, where similar steam bath traditions developed, such as the Russian banya. At a point, Finnish immigrants took sauna culture with them to North America and beyond, making it popular worldwide, especially in the 20th century.

Today, saunas come in various forms, including traditional wood-fired saunas, electric saunas, infrared saunas, and steam rooms. Despite these advancements, the essence of sauna culture—relaxation, cleansing, and social bonding—remains deeply rooted in Finnish traditions but in recent years, Africa has also embraced sauna and

steam bath practices, integrating them into wellness and hospitality industries.

It is important to clarify that there have been early steam and heat traditions in Africa. For instance, before modern saunas arrived, several African cultures had their own versions of heat-based therapies. There was Ethiopian Tish—a form of steam bath where people use heated stones and herbal steam for detoxification and healing. There was also the Moroccan hammam—a well-established bathhouse tradition involving steam rooms, scrubbing, and relaxation, similar in function to a sauna. There were also Egyptian sweat lodges—ancient Egyptians used heat-based purification methods in temples and healing practices.

Modern Sauna Adoption in Africa

Many upscale resorts and wellness centres in South Africa, Kenya, Egypt, Nigeria, and Morocco now feature Finnish-style saunas. With growing awareness of sauna health benefits, gyms and wellness retreats incorporate

them for relaxation and detox. Some African spa resorts blend Finnish sauna principles with indigenous herbal steam practices. While sauna culture is still growing in Africa, the combination of traditional heat therapy and modern saunas is creating a unique fusion of wellness experiences. Unlike some African countries, sauna culture in Rwanda is a relatively modern development, growing in popularity over the past few decades as part of the country's expanding wellness and hospitality industry. While traditional heat-based therapies were not historically common in Rwanda, the introduction of Finnish-style saunas and steam baths has gained traction in urban areas, particularly in Kigali and other major towns.

There are factors that have contributed to sauna popularity in Rwanda. One of such is the growth of the hospitality industry. Yes, you read correctly. Many luxury hotels, resorts, and spas in Rwanda have incorporated saunas and steam rooms as part of their wellness offerings. For instance, popular establishments in Kigali,

Musanze, and Lake Kivu offer sauna experiences for both tourists and locals. Another factor is the influence of global wellness trends; as more Rwandans travel abroad, they bring back an appreciation for sauna culture. Thus, health and fitness centres now include saunas as part of post-workout recovery routines.

One important factor that cannot be overlooked is the health benefits and traditional herbal steam fusion. It is an understatement to say that sauna therapy is recognised for its benefits in detoxification, muscle relaxation, and stress relief. All the sauna centres that I have used integrate traditional Rwandan herbs like basil, mint, chamomile, rosemary, sweet clover, and eucalyptus into sauna steam therapy, blending modern techniques with natural healing practices.

In addition to this, I have observed cultural shifts and urbanisation. I have found senior university lecturers, director generals, CEOs, NGO country representatives, medical doctors, and business owners in sauna rooms. It dawned on me that with the increasing middle class in

Rwanda, there is a greater demand for leisure and self-care activities. For example, urban dwellers, especially professionals, use saunas as a way to unwind and socialise.

Common Types of Saunas

In Rwanda, the most common types of saunas found in hotels, spas, and wellness centres are Finnish dry sauna (traditional sauna), Steam sauna (steam room), Herbal steam sauna (fusion of traditional and modern), and Infrared Sauna (less common but emerging). I will try to clarify this further.

Finnish dry sauna (traditional sauna) uses heated stones to produce dry heat, with temperatures ranging between 70–100°C (158–212°F). It is common in luxury hotels, gyms, and wellness resorts in Kigali and other cities. Some places offer the option to pour water on the stones for mild steam. Steam sauna (steam room) uses steam to create a humid environment with temperatures around 40–50°C (104–122°F). It is popular for skin detoxification

and respiratory health. This is found in high-end spas, hotels, and some fitness centres. Herbal steam sauna (fusion of traditional and modern) in its case incorporates local Rwandan herbs like eucalyptus, lemongrass, and other medicinal plants. Some wellness centres use heated stones and boiling water with herbs for a more natural steam therapy. This is common in local spas and traditional healing centres. However, Infrared Sauna, although less Common but Emerging uses infrared heaters to warm the body directly instead of heating the air. It is gaining popularity in some high-end wellness centres for its detox and muscle recovery benefits.

Potential Health Benefits of Traditional Sauna

Saunas increase blood circulation, muscle relaxation, and sleep quality by increasing blood flow, delivering oxygen and nutrients, raising heart rate, and lowering blood pressure. They also aid in muscle relaxation by lowering tension, eliminating lactic acid, and boosting recovery. Saunas also increase the release of endorphins, the

body's natural painkillers, which alleviates suffering. They also increase sleep quality by lowering core temperature, encouraging muscle and mental relaxation, regulating melatonin production, and decreasing cortisol levels. Incorporating sauna sessions into your regimen can improve your health and well-being.

Hussain and Cohen (2018) examined recent evidence on the health advantages of frequent dry sauna use. Their rigorous search of medical databases yielded 40 clinical studies involving 3855 participants, with the majority reporting positive health results. The majority reported a variety of outcome indicators, with one tiny research finding a negative health effect. I will try to summarise their findings as much as possible below.

According to this review, regular dry sauna bathing improves numerous health indices, notably Finnish sauna bathing, and is associated with lower overall mortality, cardiovascular events, and dementia in men. Saunas can also benefit those with rheumatic illnesses, chronic fatigue, pain syndromes, chronic obstructive pulmonary

disease, and allergic rhinitis. Sauna bathing may improve workout performance, skin moisture barrier properties, and general quality of life. However, there is little evidence to distinguish between repeated Finnish-style and infrared sauna bathing. Despite the fact that Finnish-style saunas are considered inappropriate for people with cardiovascular disease, more than half of the studies analysed found that they were beneficial to health.

A far-infrared sauna study on patients with cardiovascular disease and congestive heart failure has shown encouraging results, demonstrating that heat stress causes significant sweat, which leads to hormetic adaptation and beneficial cardiovascular and metabolic effects. However, the relationship between sauna activity and health outcomes may not be causal, and sauna use is simply a marker of a healthy lifestyle.

Sauna bathing is thought to have a number of health benefits, including increased cardiac output, decreased peripheral vascular resistance, and physiological changes in cardiovascular parameters. End-organ effects on the

central and autonomic neural systems, peripheral vascular endothelium, hypothalamus-pituitary-adrenal axis, kidneys, and liver further enhance these effects. Sauna bathing may trigger a stress-adaptation reaction, resulting in "hormetic adaptation" and the development of "sauna fitness", which may be similar to exercise-induced hormetic adaptation responses. According to newer, single-cell analysis methods, sauna bathing increases the generation of free radicals and reactive oxygenated species, as well as antioxidant activities via proposed nitric oxide (NO-) dependent processes in blood and upregulation of specific HSPs (heat shock proteins) and HSFs (heat shock factors) in semen.

Regular sauna bathing may promote stress adaptation even further by allowing toxicants to be eliminated through profuse perspiration. Toxic metals, herbicides, and petrochemicals may be eliminated more quickly through induced perspiration than through urine. Perspiration-patch technology, which is used to monitor illicit drug use, has helped to show the importance of

perspiration in excretion pathways. More research on sauna-based detoxification is required because the excretory activities of the skin via sweating or other active, passive inter- and/or transcellular, and transdermal pathways are complex, and the role of frequent sweating in promoting excretion and improving health is still unknown.

In addition to substantial physiological effects, sauna bathing has been shown to produce positive psychological effects such as increased well-being, pain tolerance, and self-assessed symptom-related rating. Sauna bathing's psychological impact could be attributed to a variety of factors, including endorphin release, forced mindfulness, psychological stress reduction, relaxation, improved sleep, time away from hectic lifestyles, placebo effects, and other aspects of individual psychological and social interactions that are likely to occur in the context of frequent sauna activity.

However, this review also found that Finnish-style and infrared sauna bathing can cause mild to moderate heat

discomfort, low blood pressure, transient limb pain, airway irritation, and claustrophobia. These adverse effects are especially severe in patients with chronic fatigue syndrome, persistent pain, rheumatoid arthritis, and ankylosing spondylitis. The heat and increased perspiration associated with sauna activities may alter immune responses and sperm production. These findings are consistent with earlier research into the impact of genital heat stress on sperm quality. However, these effects revert to normal after 6 months of not using saunas. More research is needed to determine whether lower-temperature infrared sauna bathing has similar results, as well as whether sauna bathing affects male fertility.

Caution when Utilising Traditional Saunas

Traditional saunas have several health benefits, but they also have possible drawbacks and risks. All users should bear in mind that excessive sweating can cause dehydration and electrolyte imbalances, ultimately

leading to heat exhaustion or heatstroke. Overheating can result in nausea, dizziness, and fainting, particularly in people with low blood pressure. Sauna use can cause cardiovascular strain, which raises the heart rate and blood pressure. Skin irritation and dryness are common, particularly among people with sensitive skin. Respiratory problems may develop, particularly in highly hot or humid settings. Public saunas can harbour bacteria, fungus, and viruses, which raises the risk of infection. Heat exposure may cause fertility issues. Pregnant women, epileptics, and anybody using drugs that alter body temperature regulation should avoid saunas.

To enjoy a traditional sauna safely, limit your time inside, cool down gradually, listen to your body, avoid sauna use if you have specific medical issues, practise excellent cleanliness, never use a sauna alone, protect your skin and hair, take pauses between sessions and use well-maintained saunas. Stay hydrated by drinking plenty of water before and after your workout, opting for

electrolyte-rich drinks if you sweat, and avoiding alcohol and caffeine. Begin with brief sessions, limiting your time inside to 15-20 minutes. If you have cardiac problems, listen to your body and stay away from excessive temperatures. If you have any underlying health concerns or sensitive skin, consult your doctor.

Which Sauna is best for your Health?

Saunas are classified into several categories, each of which provides distinct benefits based on health goals, comfort preferences, and heat tolerance. Traditional Finnish saunas are ideal for sauna purists, athletes, and deep relaxation and moderate humidity. Infrared saunas are ideal for those who are sensitive to high temperatures, prefer a softer experience, or are concerned with pain alleviation or skin health. Steam rooms are good for persons who suffer from respiratory problems, want humid heat, or want to hydrate their skin. Smoke saunas are great for traditionalists and those looking for a raw, rustic experience. Outdoor barrel

saunas are great for nature lovers, outdoor enthusiasts, and social gatherings, with temperatures ranging from 70 to 100 degrees Celsius and low to moderate humidity.

Saunas provide a variety of health benefits, but the optimal type depends on the unique physical or mental health needs. Traditional saunas use hot rocks or steam to warm the air, which subsequently heats the body to temperatures ranging from 150 to 195°F (65 to 90°C) with high humidity, whereas infrared saunas use light waves to heat the skin without warming the surrounding air. With lower temperatures ranging from 120 to 150°F (49 to 65°C), the heat penetrates deeper tissues.

Both are beneficial for cardiovascular health, including high blood pressure, heart disease, and circulation difficulties, but infrared may be better. There is little doubt that both saunas can increase vasodilation, lower blood pressure, and improve circulation; however, infrared saunas may be softer on the heart due to the lower ambient heat, making them more suitable for patients with heart issues.

Infrared saunas are the finest alternative for muscle rehabilitation and joint discomfort, including arthritis, fibromyalgia, and sports injuries. This is due to the fact that infrared heat penetrates tissues deeper than surface heating in regular saunas, by at least 1.5 inches. This helps to relieve muscle soreness, stiffness, and chronic pain problems, including fibromyalgia and arthritis. Similarly, if you want to detoxify by removing heavy metals and toxins, an infrared sauna is the finest alternative. The reason is not farfetched: infrared saunas produce a deep sweat at lower temperatures, allowing for better detoxification with less heat stress than traditional saunas.

However, if you want to treat respiratory illnesses like asthma, bronchitis, and sinus problems, a traditional sauna may be the ideal option because the hot, humid air can help expand airways, loosen mucus, and reduce congestion. Infrared saunas do not have this benefit because they lack humidity, which might dry out the airways.

I came across a few people in a typical sauna who were looking to lose weight and enhance their metabolism. While regular saunas might offer the sensation, especially temporarily, infrared saunas have a modest advantage over traditional saunas. This is because infrared saunas directly heat the body, raising core temperature and increasing heart rate, much like moderate cardio. This is not to say that traditional saunas don't burn calories; they just use more external heat. According to studies, a 30-minute infrared sauna session can burn 200-600 calories, much like jogging.

While it is not recommended to use a sauna if you have a skin ailment, infrared saunas are better for treating skin health issues such as eczema, acne, anti-ageing, and wound healing since infrared heat stimulates collagen production, increases circulation, and improves healing. Traditional saunas can aid with deep pore cleansing through sweating, but they do not provide the same skin-healing effects.

Finally, when looking for a sauna to help with stress, anxiety, and sleep troubles, a traditional sauna is the ideal option because it is more calming; however, an infrared sauna may also relieve stress through heat-induced endorphin release. The ritual and environment of a traditional sauna, which frequently includes steam, dark lighting, and heat, can produce profound relaxation. However, infrared saunas may be effective.

Saunas are not just for Enjoyment

Unlike some people who only use the sauna to caress their side chicks in the sauna chamber, the facility is intended for muscular relaxation, meditation, treatment and healing of mental and medical disorders, not simply enjoyment. That is why wearing heavy makeup to the sauna might be an oversight because it can lead to inflammation, breakouts, and slowed detoxification. In addition to makeup, both men and women should avoid strong perfume or cologne due to probable chemical smells. If they must wear one, they can choose a neutral

aroma made from essential oils or go completely fragrance-free. In the similar vein, I have spoken with a few men and women who wear accessories such as rings, earrings, bracelets, or necklaces in the chamber to minimise heating and irritation. In fact, it is best not to wear heavy jewellery to avoid burns or discomfort. I believe it is preferable to focus on health above attractiveness during sauna sessions.

Chapter THREE

Sauna Preparations

I enjoy offering sauna use to my clients who I believe are experiencing moderate depression. They often recover after a few uses. Their muscles relax. They sleep well and can coordinate their thoughts because they are free of unneeded anxiety, restlessness, fears, and the tendency to read meaning into simple statements. In a nutshell, they are in control of their emotions, thoughts, expectations, desires, and selves. Truly, long-term sauna use has been associated with decreased sadness, anxiety, stress, and cognitive function, with some research indicating that it may increase cognitive performance as people age (Rahinduwa, 2024; Von Schulze et al., 2020). Furthermore, Hitsuwari et al. (2024) investigate the relationship between sauna bathing and psychological aspects, discovering that sauna bathers have enhanced bodily sensory imagery and higher awareness, which is attributable to increased sensitivity to physical sensations.

Sauna etiquette and conduct are essential to ensure everyone enjoys their experience. I had always prepared them for this phenomenon, even if they had previously visited a sauna. You know, not everyone who uses a sauna benefits from the experience. General sauna etiquette requires that you enter and exit the sauna as quickly as possible to keep the heat controlled. While stretching or lying down in a sauna is permitted, it is necessary to analyse the room's space limits. Likewise, in the sauna, respect the silence, maintain space, keep sweat to yourself, control heat responsibly, and limit strong scents. In a mixed-gender sauna, people should follow the sauna's guidelines (sadly, providers rarely publish any rules), use the loincloth or towel properly, respect personal space, avoid staring, and be mindful of body language. They should maintain appropriate behaviour, keep conversations low-key, prevent excessive activity, and practice good hygiene and cleanliness. They should shower before entering, remove any perspiration, lotions, or oils, and avoid wearing highly scented

products. Following these principles helps to ensure that everyone has a respectful and pleasurable sauna experience. These standards will contribute to a safe and comfortable atmosphere for all users, lowering the chance of health problems.

Sauna etiquette varies according to country, culture, and facility requirements. Unclad saunas are widespread in Finland, where it is believed that clothing might trap sweat and interfere with the sauna experience. In Germany, nudity is absolutely necessary for hygiene, and mixed-gender saunas frequently include gender-specific settings. Towels are used for cleanliness, although complete body wrapping is uncommon. Swimsuits are rarely worn in traditional saunas because they trap perspiration and toxins. Quietness is valued, and looking is discouraged. In Rwanda, nudity is not socially acceptable, and mixed-gender saunas are widespread. During saunas, most users wrap themselves in a loincloth but take final showers with a towel.

Speaking loudly in sauna rooms.

Can those who usually talk in sauna rooms lose something compared to those who stay quiet? Users who chat a lot in sauna chambers may lose certain benefits compared to those who remain silent. Talking keeps the mind active, which may inhibit the profound relaxation that sauna use is intended to promote. Silence allows the nervous system to slow down more fully. Sauna heat naturally promotes deep, leisurely breathing. Conversation can disturb this, resulting in shallower, quicker breaths, perhaps limiting the respiratory and relaxing advantages. Talking promotes physical activity by slightly moving facial muscles and chest movement, which might make your body struggle more with heat regulation, resulting in faster weariness.

On occasion, I have witnessed the elderly depart the chamber because the noise disturbed them. In many cultures, a silent sauna is considered proper etiquette. Being boisterous might bother others and possibly create a stressful environment. I have been to sauna chambers

where the users are foreigners from many countries, including America, the United Kingdom, Asia, and even African countries. When you are outside the chamber, you might think the users inside are arguing. Having said that, some light discussion is acceptable, especially if it is calm, slow, and appropriate for the sauna's peaceful atmosphere. A user seeking mental health advantages and using the sauna as a time for deep relaxation or meditation may be further annoyed by this nauseating loudness.

Culture is an integral part of sauna chamber discourse. In Finland, stillness is highly respected inside the sauna. This is because they regard the sauna as a sacred, spiritual area – a place for deep relaxation, introspection, and even healing. Although conversation is permitted, it is typically quiet, slow, and meaningful. Loud discussion, jokes, and debates are typically viewed as impolite. Traditionally, even major conversations such as business deals took place in saunas, albeit in a peaceful and almost ritualistic manner.

In Rwandan saunas, particularly in traditional settings, the culture is more communal and social. Talking is far more acceptable and even encouraged. A sauna is a place where individuals can share their stories, advice, and life experiences. Laughter, spirited talks, and even singing are possible, particularly among close friends or family. The sauna is used for more than simply physical detoxification; it also promotes emotional and social cleansing, which strengthens community relationships. The purpose here is not to point out which cultures do the right thing.

I am an African who is proud of his culture, and no continent can match Africa in terms of communal power; it is our history! However, that debate can take place outside the chamber, where we drink our black tea or water, rather than within the sauna, where the therapeutic intervention is taking place on our bodies. It is as if, due to our ignorance, we shoot ourselves in the foot whenever we chat loudly in the sauna chamber.

Operations Inside the Sauna Chamber

The operation of a sauna chamber in Rwanda—locally known as "ibibuga by'imyotsi" or "urwogero rw'imyotsi"—follows a blend of thermal therapy and indigenous wellness practices. Rooted in centuries-old traditions, the Rwandan sauna experience is not only physical but also communal, medicinal, and spiritual.

Heating the Chamber

The heat in traditional Rwandan saunas is generated using wood-fired stones, a method known locally as gucanira amabuye. Stones are arranged in a fire pit and heated until red-hot. These stones are then placed in a sealed chamber constructed from local materials like mud, eucalyptus poles, or banana leaves, helping retain both heat and medicinal steam. The goal is to create a hot, humid microclimate that mimics the natural healing properties of volcanic steam.

Humidity and Herbal Steam

Rwandan saunas emphasise steam infusion through the use of traditional medicinal plants. Water is poured over the hot stones, releasing steam infused with herbs such as inturusu (eucalyptus), umwenya (lemongrass), igitovu, and umukunde. These plants are known for their respiratory, anti-inflammatory, and relaxing properties. The steam generated is often pungent and aromatic, assisting in deep breathing and detoxification.

User Engagement

Before entering the sauna, participants perform a cleansing ritual (kwisukura) using warm water to wash away surface dirt and prepare the body. Inside, users either sit or squat, often wrapped in loincloths (imikenyero) or natural fibre wraps. The chamber is typically dim, quiet, and filled with herbal steam. Time inside ranges from 10 to 30 minutes, depending on tolerance and tradition. Conversations inside the sauna

often carry a communal or healing tone, reflecting the collective nature of Rwandan life.

Therapeutic Practices

In traditional settings, a carer or healer (umuvuzi) may accompany the sauna session, offering light massage (kubavuza) or rhythmic body tapping (gukuba umubiri) with herbal bundles. This stimulates circulation and enhances absorption of herbal essences through the skin. These practices are particularly common for postpartum women, elders, or those undergoing cleansing after illness or spiritual imbalance.

Sweating and Detoxification

Sweating is the core of the sauna's healing power. The intense heat opens pores, removes toxins, and relieves muscular tension. In traditional belief, ibyuka (steam) helps "unlock" negative energies or ailments hidden within the body. This belief ties sauna use to holistic health—body, mind, and spirit.

Cooling Phase

After exiting the chamber, users cool down naturally in fresh air or bathe in cold water drawn from local springs (amasoko y'amazi akonje). This sudden cooling is believed to rejuvenate the body, stabilise blood flow, and close the pores. The rest period following this process is essential for full recovery and integration of the sauna’s benefits.

Hygiene and Maintenance

Cleanliness is vital to ensure the health benefits of sauna use. In Rwandan tradition, floors are washed, herbs replaced, and stones inspected before each use. Participants often bring personal mats or wraps, respecting hygiene and social norms. The herbal water (amahwa y’ibyatsi) is discarded after each session to avoid stagnation or contamination.

I spent one year and four months to psychoeducate sauna users to drink plenty of water before, during, and after use in order to stay hydrated. This is because saunas lead them to sweat a lot. Unfortunately, I discovered that a few individuals were drinking beer before entering the sauna. This is incorrect. I sometimes advise people to avoid drinking the free black tea that most sauna companies supply because it promotes dehydration. I do not want to be misconstrued here. Drinking black tea in a sauna may provide benefits such as hydration (if taken warm or lukewarm), antioxidant protection, and relaxation. However, it does carry hazards such as dehydration, elevated heart rate, and overheating. To reduce these dangers, use decaffeinated or lukewarm tea, drink water with it, and avoid excessive caffeine use. Those with cardiac issues should drink herbal or non-caffeinated teas at a low temperature. Water remains the most effective hydration solution.

Drinking water in the sauna

Drinking water in a sauna can help people stay hydrated, but it can also put them in danger. If the bottle is constructed of plastic, heat can cause it to emit bisphenol A (BPA), a synthetic chemical used to create plastics and resins. It is found in a variety of goods, including food and drink containers, and can leak into foods and beverages. Most sauna users are unaware that BPA can function as an endocrine disruptor, interfering with the body's hormonal system and potentially causing a variety of health issues. In reality, the EU classifies BPA as a dangerous chemical because of its tendency to harm fertility and cause serious eye damage, allergic skin reactions, and respiratory irritation.

In addition, BPA can interfere with the proper functioning of the hormone system. Aside from the possibility that the water is hazardous to drink, how about the container pressure? If the bottle is sealed, heat might cause pressure to build up, perhaps leading to bursting. Alongside BPA, phthalates are a class of chemicals with

endocrine-disrupting qualities that have been linked to health problems such as an increased risk of cancer, asthma, and allergies, as well as learning and behavioural challenges in children.

Furthermore, to ensure that users are completely hydrated, they need to shower before entering the sauna chamber. Taking a warm shower before entering the sauna helps to eliminate dirt and oil from their skin, allowing them to sweat more efficiently. It is recommended that users dry themselves before entering to avoid excess dampness. It is also critical that people remove their jewellery and accessories. The reason is that metal jewelery can become heated and cause burns. Watches, necklaces, rings, and other metal things should all be removed. I have also asked that novices start with 5-10 minutes, while experienced users can go up to 15-20 minutes every session.

Likewise, I recommend to them to rehydrate properly by drinking plenty of water immediately after the sauna so as to maximise the sauna's session benefits and

guarantee good recovery. They should hydrate gently with electrolyte-rich beverages or herbal teas. They should cool down gradually by having a lukewarm or cool shower to control their body temperature. They should consume a light, nutrient-dense snack high in potassium, magnesium, and salt to replenish lost electrolytes. They should also avoid heavy, oily foods immediately following, since their digestive system is still in relaxation mode. They ought to recuperate and relax for at least 15 to 30 minutes before indulging in strenuous activity. Deep breathing or mild stretching can help you completely absorb the sauna's effects. Avoid alcohol and caffeine, which can dehydrate and strain your cardiovascular system. Moisturise your skin with natural oils like aloe vera or coconut oil, and wait at least 1-2 hours before drinking alcohol or coffee.

Diseases Users can Contract while Using the Sauna

Saunas are not as secure and clean as people believe. I have seen sauna users expel mucus or spit on their

loincloths or on the chamber floor. Spitting is never acceptable. Spitting on the towel or in the sauna is extremely unsanitary and disrespectful to others. Saunas are shared areas designed for relaxation, so keeping them clean is essential. If someone needs to spit, they should exit the sauna and use an appropriate washbasin or garbage can. And I have seen many others lie on the same floor. While some cough without covering their mouths, people around them remain unconcerned. Users mistakenly believe that no microorganisms can survive in the sauna heat. How mistaken they are! The current situation of saunas is unsafe. They can potentially pose health dangers. Skin infections, bacterial infections, and viral infections can all result from the warm, humid climate.

Improperly maintained water sources can lead to respiratory diseases like Legionnaires' disease and fungal lung infections. Apart from heat-related ailments such as heat stroke and exhaustion; dehydration, dizziness, and fainting; cardiovascular risks such as heart disease and

low blood pressure; and other potential dangers such as urinary tract infections, yeast infections, and eye infections are all possible. Users can limit these hazards by using clean towels, wearing flip-flops, showering before and after usage, not touching their face, eyes or mouth with dirty hands, staying hydrated and making sure the sauna is adequately cleaned and aired.

Saunas are normally safe when used responsibly and in well-ventilated conditions, but based on my observations, I am concerned about utilising saunas during the pandemic, particularly communal saunas, due to close contact dangers and surface contamination. Although high sauna temperatures can kill many viruses and germs, SARS-CoV-2 can survive in damp conditions if hygiene is poor. Best practices for sauna use during and after COVID include using private or well-regulated saunas, cleaning and disinfecting surfaces, avoiding crowded or poorly ventilated saunas, staying hydrated, and using personal towels or clean ones supplied to individuals by the service providers. Also, while I

recommend that you avoid saunas if you are sick or recovering, I also recommend that if you see someone constantly coughing or sneezing, leave the sauna chamber; I have done so on a few occasions. Finally, everyone should be aware that saunas are not a cure for COVID-19 or any other viral infection, although they can improve overall immunological health and promote relaxation.

Chapter FOUR

The System of Sauna

By integrating sauna sessions into a wellness routine, individuals can experience better circulation, muscle relaxation, and overall stress relief. Saunas increase blood circulation, muscle relaxation, and sleep quality by boosting blood flow, delivering oxygen and nutrients, and lowering blood pressure. Heat stimulates blood vessels to widen, which improves circulation and reduces lactic acid. Saunas also aid muscular rehabilitation by reducing stiffness and soreness while boosting endorphin release. Following a sauna session, the core temperature decreases, indicating that the body is preparing for sleep. This relaxation helps control melatonin production and reduces cortisol levels, resulting in greater sleep quality.

I am therefore amused anytime I see so many activities going on in the sauna chamber! I tell myself, "Surely, these people are unfamiliar with the sauna process. I see individuals doing push-ups and jogging. Some begin to vigorously run their hands around their entire body. While heavy workouts are not recommended in the high heat of a sauna, light exercises and stretching can improve flexibility and circulation. Some good options include gentle stretching, yoga poses, breathing exercises, and isometric exercises. When a person enters a sauna, their body responds to the heat in a variety of

ways. For example, heat causes blood arteries to expand, which increases blood flow throughout the body. This improved circulation increases oxygen and nutrition supply to tissues while also speeding up the elimination of metabolic waste products. Similarly, sauna-induced heat can cause an increase in heart rate of 30-50%, replicating the effects of moderate exercise and increasing cardiovascular conditioning. As the body seeks to cool itself, sweat glands activate, resulting in perspiration, which aids in the elimination of toxins, heavy metals, and other pollutants.

In the same vein, heat penetrates deep into tissues, reducing muscle tension and stiffness, which aids in recovery from physical activity or injury. Furthermore, exposure to heat boosts the release of endorphins, which promote relaxation and reduce tension. Thus, sauna-induced vasodilation enhances peripheral blood flow, which improves tissue oxygenation, boosts nutrition delivery to muscles and organs, and lowers blood pressure due to lowered vascular resistance. treatment of circulatory problems such as hypertension and arterial stiffness. What is the significance of using our hands to regulate blood flow in the sauna if this action is to work on the muscles and bones? Heat therapy from sauna use already aids in the relief of muscle soreness and joint discomfort, as well as the acceleration of workout

recovery by lowering lactic acid accumulation. Increased flexibility and reduced muscular stiffness aid persons with arthritis or musculoskeletal problems.

The Dry Brushing: the Better Option

Dry brushing has become popular as a beauty treatment, particularly when paired with a sauna session. It has more significant advantages when it comes before saunas because it mimics the benefits of a massage by opening pores and making them sensitive to the heat produced by the sauna. Dry brushing exfoliates the skin, removing impurities such as dead skin, pollutants, and cellular waste. It promotes lymphatic drainage, which helps to fight infections and increases blood circulation. When done before a sauna session, it will help to achieve soft skin and a beautiful complexion. It promotes relaxation, which provides a meditative effect and relieves muscle tension.

To dry brush before a sauna session, use the appropriate brush, a dependable, skin-friendly brush designed for this purpose. Do not use rough bristles because they can create scratches, rashes, and damaged skin. The golden rule of dry brushing is to brush upwards rather than downwards, beginning at the bottom of your feet and moving to the back of your heel. Dry brushing should be avoided in places where there are wounds, skin lesions,

rashes, infections, blisters, moles, or warts. You may need to consult with your doctor if you have eczema or psoriasis before starting dry brushing.

Furthermore, I suggest applying soft movements rather than vigorously touching your skin and avoiding brushing the same spot twice. While there are no hard and fast guidelines for how often you should dry brush, it is important to avoid or postpone it if you are dealing with skin concerns until they are resolved. It should also be emphasised that dry brushing has disadvantages, mainly when performed poorly, such as brushing too aggressively or frequently, which can irritate the skin.

Myths About Saunas

While it is undeniable that sauna therapy improves blood circulation, promotes muscle relaxation, treats various ailments, and contributes to overall health and wellness, it is important to dispel some sauna myths. Saunas are known to cleanse the body. While saunas encourage sweating, the liver and kidneys are responsible for the majority of body detoxification. Saunas help remove small amounts of pollutants through perspiration, but they do not replace thorough detoxification.

Another fallacy is that saunas promote permanent weight loss. Saunas promote transient weight reduction owing to sweating, although it is largely water weight

rather than fat loss. Similarly, it is erroneous to say that saunas treat all ailments. Saunas provide a variety of health benefits, but they do not cure cancer, diabetes, or chronic ailments. I have also heard from several well-educated folks that saunas are bad for your heart. I can tell you that for the most part, moderate sauna use is safe and may even lower blood pressure, but individuals with serious heart diseases should visit a doctor.

I have heard disputes about drinking alcohol before or after using a sauna, but some gentlemen carried beer inside and shared it with their side chicks. They argued that consuming alcohol in a sauna was safe. Alcohol and saunas are not compatible because alcohol causes dehydration and disorientation, which can pose serious health hazards.

Common Injury in Saunas

According to Kaiser et al. (2023), the most common causes of injury during sauna bathing were slips or falls and dizziness or syncope. The latter can be avoided by improving personal behaviour, like drinking enough water before and after each sauna bath, whereas slips and falls can be avoided by revising safety regulations, including the requirement to wear slip-resistant slippers. Thus, everyone, even the operators, may help to reduce injuries associated with sauna bathing. This was the

counsel I gave an operator after I slipped and hit the back of my neck on the concrete in the first week of April, 2025. The tares were so smooth, and the slippers were not gripping. The sauna later modified the placement of the shower mat.

Rubber slippers are generally not suitable for use in saunas due to heat sensitivity, emission of gases, and melting risk. Sauna-safe footwear, such as wooden clogs, cork slippers, and special sauna sandals made of heat-resistant materials, is recommended. Such slippers can be made of wood, cork, linen or cotton, heat-resistant EVA foam, or bamboo fibre. For clarity, wooden clogs are traditional and heat-resistant, whereas cork slippers are soft, light, and breathable. EVA foam slippers are waterproof and comfortable underfoot, while bamboo fibre slippers are naturally antimicrobial and breathable.

Slippery floor is not as dangerous as heat stroke which is a life-threatening disorder in which heat exceeds your body's ability to regulate its temperature. The symptoms include dizziness, fainting, blurred vision, slurred speech, and disorientation. Heat stroke reduces blood flow and damages essential organs. The human body is designed to operate at 98.7F, and a core temperature increaseove 105°F is considered a significant medical emergency. However, temperatures above0°F cannot be tolerated indefinitely. A sauna is supposed to be soothing, not a

torture apparatus. Staying indoors for far longer than necessary as an endurance workout is exceedingly risky. One of the finalists in the 2010 World Sauna Championships, Russian Vladimir Ladyzhensky, died as a result of acute heat exposure.

In their report, Wegner et al. (2021) present two case studies that show the significance of heat exposure in sauna-related mortality. A 77-year-old man and a 73-year-old lady were discovered dead in saunas with temperatures of 78°C and 70°C, respectively. Autopsies and follow-up examinations revealed no cause of death other than heat shock. Pre-mortal temperature effects were detected using heat shock proteins in the kidneys and lungs, as well as aquaporin 3 in the skin. In the same vein, Nothnagel et al. (2024) described a 61-year-old lady who died after spending more than 30 minutes in an 80°C sauna, which resulted in a second-stage cerebral haemorrhage and COVID-19 infection. The instance emphasises the necessity of raising awareness and developing methods to reduce the fatal consequences of heat exposure. Likewise, McIver and Zia (2025) reported an unusual instance of heat stroke caused by prolonged sauna use, which led to multiorgan problems. The patient recovered without advanced organ support, emphasising the need for prompt care in emergency rooms.

Meanwhile, in their study, Kawahara et al. (2025) discovered that sauna use can lead to serious health problems, particularly in the elderly. The study included 25 people who were moved from saunas to an emergency medical centre. The majority were men, with underlying illnesses such as hypertension and diabetes. The primary diagnoses were cardiac arrest, head injuries, heat stroke, and seizures. 75.0% of cardiac arrest patients experienced symptoms in baths. Four individuals died in the ER, 17 were admitted, and three died while hospitalised. The study emphasises the importance of raising awareness and implementing preventive actions among people at high risk.

There are other causes of injury or death related to sauna. For instance, according to Lunetta et al. (2020), a middle-aged man died unexpectedly in a sauna after using amphetamine, buprenorphine, and benzodiazepines. The medications' effects on cardiocirculation, body thermoregulation, and excessive temperatures are likely to have led to his death. This instance demonstrates the dangers of using amphetamine-like sympathomimetic medications in hot surroundings and during sexual activity. Duch et al. (2020) also investigated the effects of sauna treatment on the blood serum of professional cross-country skiers. They collected serum samples during two exercise

sessions, both before and after 10 sauna treatments. The study discovered that post-exercise alterations in serum thermal denaturation transition were similar independent of sauna use, although the intensity was higher in the exercise session following the sauna.

Despite the above frightening reports, the good side of sauna use cannot be overemphasized. Hussain et al. (2019) conducted the first global sauna study, which indicated that relaxation or stress reduction was the most commonly mentioned motive to use a sauna, with most sauna bathers also reporting improvements in sleep lasting 1-2 nights following sauna use. It was also reported that sauna users who bathed 5-15 times per month had comparatively higher mental well-being scores, while many reported sauna bathing for 'detox', which is not yet well understood by the research community, and a few reported sauna bathing for cardiovascular benefits, which is supported by research.

In the same vein, according to a study conducted in Eastern Finland by Laukkanen et al. (2015), sauna bathing improves haemodynamic function while decreasing cardiovascular and overall mortality. The study examined 2315 middle-aged males and discovered a hazard ratio of 0.78 for 2 to 3 sauna bathing sessions per week and 0.37 for 4 to 7 sessions per week.

Why do People Have a Longer Session in Saunas and yet not Feel Uncomfortable?

I understand that sauna heat can be handled without immediate discomfort due to physiological adaptations, controlled surroundings, and psychological factors, and that heat acclimatisation includes effective sweating, improved circulation, and a lower heart rate. Traditional saunas, particularly Finnish-style ones, have minimal humidity, making high temperatures more bearable. In reality, endorphins, a naturally occurring feel-good hormone, cover discomfort. Similarly, while seated, relaxed but full of psychological expectations and control, such as time, posture, and proximity to the warmth, assist in managing the sensation. Circulatory adaptations, such as blood vessel dilatation and higher heart rate, also help to keep core temperature stable for longer periods of time.

Yes, I certain about all of this, and that was my response until I came across a guy and a lady in two distinct sauna settings, which blew my mind. Each of them sat on the top layer until I finished three sessions, including breaks. I had to enquire if they didn't feel any heat. Their response was unanimous: they did not feel the heat. I advised them to consult their doctors. This is because certain underlying medical disorders may affect a person's capacity to feel or respond to heat in a sauna,

resulting in a lack of discomfort despite high temperatures. This decreased heat sensitivity can be harmful since it prevents the body from triggering cooling processes such as sweating, increasing the risk of overheating. Anhidrosis and hypohidrosis, for example, are conditions characterised by a reduction or lack of sweating, limiting the body's ability to regulate temperature. Nerve damage, skin problems, and certain drugs are also potential causes.

Again, damage to the autonomic nerve system, which is common in diabetes, can alter temperature regulation and sweating responses. Multiple Sclerosis (MS) is another condition that can impair the body's capacity to regulate temperature, resulting in heat sensitivity or intolerance. In the same way that an underactive thyroid can diminish metabolic activity, resulting in decreased heat generation and altered heat perception, certain medicines, such as anticholinergics, antihistamines, and some antidepressants, can block sweating and influence heat perception. Diabetes-related nerve damage can impair perspiration and heat perception, raising the risk of overheating.

Another cause is ageing, which can impair sweat gland activity and circulation, limiting the body's capacity to respond to heat. Autism and other neurological conditions can also impair sensory perception, including

responses to heat. What about brain and spinal cord tumours or injuries? They have the potential to interfere with temperature regulation systems. In addition, certain people may have a genetic predisposition that affects sweat gland function or heat perception.

Chapter FIVE

Questions and Answers about Sauna Use

In this chapter, we shall attempt to answer some of the questions frequently asked about sauna use.. Where necessary, we shall support the answers with study findings.

Can Using Sauna Cause a Red Eye?

The answer is a yes, with some individuals, but it can be handled. The truth is, when subjected to high ambient temperatures and humidity levels, such as those seen in sauna therapy, the human eye becomes one of the most sensitive parts of the body. The sauna heat interacts with the human eye, potentially causing a variety of ocular symptoms as a result of the heater's radiation and the high ambient temperature. Wessapan and Rattanadecho (2015) studied heat transport in a diverse model of a human eye exposed to sauna therapy and discovered that infrared saunas have faster circulation patterns and greater ocular temperatures than traditional saunas. Furthermore, shared saunas produce a warm, humid environment in which germs and viruses can spread, raising the risk of eye infections. To protect your eyes, choose the appropriate sauna temperature and duration, stay hydrated before and after sessions, wear protective

eyewear, avoid rubbing or touching your eyes, maintain proper ventilation, exercise caution when using contact lenses or eye drops, and take breaks every 10-15 minutes to avoid eye strain.

The response I have provided to people who ran away from saunas after a few sessions because of red eyes is that red eyes in a sauna can be caused by various factors, including high heat, humidity, and exposure to certain substances; irritants in the air; steam or heat exposure; sweat and salt; dehydration; allergic reactions; and contact lens use, particularly when used for an extended period of time (See appendix 2).

Is Using a Sauna every day Safe?

Saunas, as advised throughout this book, can be a pleasant approach to relieve tension. I would want to draw your attention to the fact that too much of everything has negative consequences. Just as water is beneficial to our bodies, but excessive consumption produces water intoxication, using a sauna too frequently can have negative consequences on the user's physique and overall health. If you use a sauna for an extended period of time, usually more than a half hour, you may experience dehydration due to excessive perspiration and insufficient fluid intake; overheating, which can result in heat stroke or heat exhaustion; or mineral loss,

which leads you to deplete vital electrolytes and minerals through sweating.

As previously stated in this book, having a past medical condition can exacerbate the effects of the sauna. Saunas, for example, have the potential to disrupt the body's natural healing processes. Saunas should be avoided within 48 hours after sustaining an injury, such as a sprain. If a user has had a heat stroke or a recent heart attack, it is not recommended that they use the sauna. Similarly, someone taking steroids for a condition like lupus should avoid saunas because they can interfere with blood circulation, causing the medications to not be distributed properly. Saunas may also disrupt the usual flow of medication provided via patches, such as nicotine patches. For example, excessive sweating can cause the medication to be absorbed into the skin in far higher amounts than indicated.

However, in their study of 2277 males, Kunutsor et al. (2018) found that cardiorespiratory fitness (CRF) and sauna bathing frequency are independently related with lower mortality risk; a combination of good CRF and frequent sauna bathing may impart further survival benefits. They discovered that combining high CRF levels with frequent sauna bathing (3-7 sessions per week) resulted in a significant risk reduction in fatal cardiovascular and all-cause mortality events when

compared to good CRF or frequent sauna bathing alone. A combination of strong fitness levels achieved via aerobic exercise and frequent sauna bathing may provide additional health advantages and reduce the chance of death.

Their findings are supported by many recent studies, including those by Fedorchenko et al. (2025) and Jang et al. (2025). There are two important points that have emerged. The first one is the statements that are not based on empirical data, which allege that it is not safe to do sauna every day. Sauna is healthy and safe to do every day as long as the users limit their time and take enough water. The second point is that sauna, combined with some sort of exercise, would yield optimal results, unlike living a sedentary lifestyle all day and hitting the sauna chamber at night. There is a need to be active.

Can a Muslim Lady Use a Mixed-Gender Sauna?

I had never considered the impact of sauna on the faith of Muslim users until the 10th of February, 2025, when I needed to recommend sauna to a fully hijab Muslim woman. I practically went with her to a secure but more expensive sauna establishment and asked the receptionist to give her an extra cloth to conceal herself in the sauna. However, as she finished the first session and realised how many females were unconcerned about

their appearance at this mixed sauna centre, she completely relaxed.

In Islam, modesty is an important notion, especially for Muslim women who follow a rigorous interpretation of the faith. The use of saunas by a conservative Muslim lady is determined by a variety of criteria, including privacy, distinction between men and women, and cultural interpretations of Islamic rules. Some Muslim women may like or require women-only saunas to maintain their modesty, but others may feel uneasy or disturbed with Islamic body-covering standards. Some people may find private sauna choices acceptable, such as using one at home or in a reserved atmosphere.

Societal as well as private beliefs may influence sauna use. Some Muslim women may view it as a kind of self-care and relaxation that can be done in a modest, halal (lawful in Islamic teachings) manner. To discover a modest sauna alternative, Muslim ladies may check for women-only saunas, Islamic or Halal-friendly spas, private sauna rooms, modest swimwear, or home sauna choices such as infrared sauna tents or small steam saunas.

In Kigali, Rwanda, various spas provide facilities and services that cater to modesty preferences. It is essential that peculiar users contact these establishments directly

to discuss their exact requirements and guarantee they can supply the accommodations they desire.

Can a Muslim Use a Sauna during Ramadan?

Muslims can use saunas during Ramadan as long as it does not interfere with their fasting. Saunas should be avoided during fasting hours due to the risk of dehydration and weariness. The optimal time for a Muslim to visit a sauna during Ramadan is after Iftar, which allows them to hydrate both before and after the sauna. Another option is to drink before Suhoor (early morning), which allows them to rehydrate right away after sleeping.

In fact, I understand that during Ramadan in Saudi Arabia, you can use saunas, but remember to stay hydrated and listen to your body. Excessive heat exposure during fasting might raise the risk of dehydration, sleepiness, and even fainting. To minimise excessive sweating and dehydration, people should limit their sauna sessions to 10-15 minutes, listen to their bodies, and leave if they feel lightheaded, dizzy, or weak. In Saudi Arabia, saunas are generally gender-specific since there are cultural customs and laws around the separation of genders in both public and private spaces. Men-only saunas are common in male gyms, sports clubs, and spas, while ladies-only saunas are available in female gyms, ladies'

spas, beauty centres, and some hotel spa sections. Mixed-gender saunas are uncommon and are usually found in private villas, compounds, or high-end hotel suites with private spa areas.

People in Saudi Arabia utilise saunas throughout Ramadan, although with caution owing to fasting and hot temperatures. They typically go after breaking their fast, rehydrating, and eating. It is not recommended to use the sauna while fasting owing to excessive perspiration, which might cause dehydration, dizziness, or exhaustion. Spa etiquette in Saudi Arabia differs during Ramadan because of the month's spiritual and cultural significance. To travel politely and comfortably, be conscious of scheduling, respect fasting hours, maintain modesty, turn down the volume, avoid heavy smells, be patient and nice, look for Ramadan deals, and request a "Ramadan Schedule" for special packages.

It is crucial to emphasise that sauna use during fasting might be dangerous, particularly in a hot nation like Saudi Arabia. To ensure safety, avoid sauna use during fasting hours, stay hydrated, limit sauna time, listen to your body, choose evening or night sessions, avoid high heat levels, cool down gradually, and combine sauna with mild activities only.

Fairmont Riyadh Spa, Harper's Bazaar Arabia, The Ritz-Carlton, Narcissus Hotel & Spa, The Ritz-Carlton, Jeddah

Spa, Assila, a Luxury Collection Hotel, Marriott, Cobone, and Jeddah Marriott Hotel Madinah Road are among the notable establishments in Riyadh and Jeddah that provide spa services, including saunas, during the holy month. It is also worth noting that operation hours may change during Ramadan, so it is best to confirm precise times ahead of time. Reservations should be requested in advance due to high demand during Ramadan evenings. In summary, spa etiquette in Saudi Arabia during Ramadan includes being cautious of scheduling, following fasting hours, remaining modest, avoiding strong perfumes, and staying hydrated.

Is Sauna Safe while on Monthly Period?

Sauna use during the menstrual cycle is generally harmless, as it can help ease menstrual cramps by relaxing muscles and boosting blood flow. However, it is critical to consider hydration, temperature sensitivity, hygiene, and low blood pressure, and keep the sauna time moderate (10-15 minutes) to avoid overheating. Before entering the sauna, make sure to check your menstrual product for leakage. If your flow is heavy, either wait until it lightens or use additional protection. Shower before and after entering the sauna to ensure overall hygiene. Following these hygiene precautions will allow you to enjoy the sauna stress-free while also

ensuring a comfortable and secure experience for all users.

Furthermore, as long as proper hygiene practices are followed, using a sauna while on your period should not affect other users. To ensure a comfortable and respectful sauna experience while on your period, use appropriate menstrual products like tampons or cups, period-proof underwear, and swimwear or towels. Sit on a clean towel to prevent direct contact and absorb sweat. Be mindful of leaks and shower before and after to maintain cleanliness. Follow these steps to ensure a secure and comfortable experience for all users, ensuring a stress-free experience in the sauna.

Who should not Use a Sauna?

Certain individuals may not use a sauna, including: Pregnant women—for risk of overheating; individuals with heart conditions—unless approved by a doctor, people with very low blood pressure—risk of fainting, individuals with severe respiratory diseases, people with severe skin infections or open wounds, elderly individuals with heat intolerance

Can a Nursing Mother Use a Sauna?

Although there are myths that a breastfeeding mother should not use a sauna, no research has established that.

From observation, it does appear that a breastfeeding mother can use a sauna, but she should stay hydrated to prevent dehydration. She should avoid excessive heat exposure to maintain milk production, even though the study by Rosnani and Mediarti (2018) found that warm steam therapy significantly boosted breast milk production in postpartum moms, with an average of 103.59 g/dL following treatment. This shows that warm steam therapy could be a useful approach for providing postpartum maternal care at home. She should shower before breastfeeding to remove sweat that may irritate the baby. She must always listen to her body—if feeling dizzy, she should leave the sauna immediately. Contrary to a common statement about saunas, sweating from the sauna would not affect breast milk quality. This is confirmed by Razi's (2024) study of ten lactating postpartum women, which discovered that acute whole-body heat stress had no significant effect on 24-hour human milk supply in breastfeeding mothers. The study indicated that heat stress resulted in 343 mL±190 g of sweat losses, increased heart rate and mouth temperature, and did not affect milk volume. However, participants drank more fluids in the 24 hours following the heat stress, implying that increased fluid intake may be the primary component in the impact. This shows that heat-sensitive people are more likely to experience poor

health outcomes. For hygiene's sake, she may want to rinse off or wipe her skin before feeding to ensure her baby is not uncomfortable with salty skin.

Having said that, it is worth noting that a woman who has just given birth should generally avoid using a sauna until she has fully recovered. Regardless of how much she is addicted to the sauna, she must bear in mind postpartum recovery considerations. For instance, saunas cause excessive sweating, which can lead to dehydration—especially if she is breastfeeding. The heat can cause blood pressure to drop or rise suddenly, increasing the risk of dizziness or fainting. In addition to this, if she had a C-section or vaginal tears, the heat and sweating could interfere with wound healing or increase the risk of infection. She can use a sauna after a vaginal birth: it is usually safe to use a sauna after 4–6 weeks, once postpartum bleeding (lochia) has stopped and she feels strong enough. She can use a sauna after a C-section, but she should wait at least 6–8 weeks or until her doctor gives the green light. It is always best for any concerned lady to consult her doctor before using a sauna.

Among several precautions she should take if she chooses to use a sauna are drinking plenty of water to stay hydrated, limiting sauna time to 5–10 minutes to avoid overheating, going with someone in case she feels dizzy or weak, and avoiding the sauna if she still has heavy

postpartum bleeding. Let me quickly mention that I have had some overzealous psychoeducators say sauna toxins pass through a breastfeeding mother's breastpipe, thereby affecting the breastfeeding babies. This is not correct. Using a sauna does not cause toxins to pass into breast milk or affect the baby through breastfeeding. In fact, the idea that saunas "release toxins" through sweat is a common myth. The body primarily eliminates toxins through the liver and kidneys, not sweat. Thus, normal sauna use does not introduce harmful substances into breast milk.

As I have laid emphasis on almost every page for the purpose of reiteration, what is known is the fact that excessive sweating can lead to dehydration, which may temporarily reduce milk supply. To prevent this, she should drink plenty of fluids before and after using the sauna. In fact, if she feels weak or dizzy, it could be a sign that her body is under stress, which is not ideal during breastfeeding. My submission therefore is that a new mother can safely breastfeed after using a sauna as long as she stays hydrated and does not overheat. If she feels weak, dizzy, or unwell, it is best to rest and rehydrate before nursing.

Can a Man who Wants to Impregnate His Wife Use a Sauna?

Sauna use can impair sperm production and quality by temporarily lowering sperm count and motility due to heat stress on the testicles. This can cause DNA damage and decreased fertility. To reduce the impact, keep sauna sessions brief, allow cooling times between exposures, wear loose-fitting pants, minimise other heat sources and stay hydrated. Sauna use can temporarily diminish male fertility, but it is not a reliable birth control method. Sperm production usually returns within a few months of quitting sauna use, as sperm rejuvenate in roughly 72 days. However, sauna use has no significant effect on fertility in women, but excessive heat during early pregnancy can be dangerous. Excessive heat exposure during early pregnancy can raise the risk of neural tube abnormalities (NTDs), such as spina bifida or anencephaly. To reduce hazards, pregnant women should minimise their sauna use before attempting to conceive and avoid prolonged heat exposure while pregnant. Therefore, men who want to conceive should avoid frequent sauna use, as heat exposure lowers sperm count and motility. This is because sperm production requires cooler temperatures. I hope you also notice that testicles are outside the body. With frequent heat exposure, especially in a sauna, there can be a temporary reduction

in fertility. However, if a man still wants to use a sauna, he should limit sessions to once a week and avoid extreme heat exposure.

“Father's lifestyle choices and his child’s DNA

A father's lifestyle choices can have an impact on his child's DNA, but not in the way some people have made us believe. It is important to clarify that these changes are not directly altering the DNA before conception. What happens is that a father's lifestyle factors can affect the health and quality of his sperm, which can, in turn, influence the child's development and potential health. Thus, a father's lifestyle may indirectly affect the DNA of his child in the epigenetic changes. As indicated earlier, epigenetics refers to modifications in gene expression that do not involve changes to the underlying DNA sequence itself. These changes can be influenced by various factors, including diet, stress, toxins, and environmental exposures. A father's poor lifestyle habits, like smoking, excessive alcohol consumption, or exposure to pollutants, can lead to epigenetic changes in sperm. These changes can be passed on to the child, potentially affecting the child’s health, development, and even the risk for certain diseases.

Likewise, are the effects on sperm quality and DNA damage. It is a known fact that poor lifestyle choices can cause damage to sperm DNA. For instance, smoking,

heavy alcohol consumption, or obesity can lead to increased oxidative stress and DNA fragmentation in sperm. Sperm with damaged DNA may lead to increased risks of miscarriage, birth defects, or developmental disorders in the child. This can affect the child's health and may contribute to conditions such as autism or certain congenital disorders.

Even the genetic mutations are not spared. Certain lifestyle factors can increase the risk of mutations in a father's sperm. For example, prolonged exposure to environmental toxins or radiation can increase the likelihood of genetic mutations. While these mutations do not directly change the child's DNA, they can be passed down through the sperm, potentially affecting the child's genetic makeup.

Another important consideration is the impact of age. As fathers age, the quality of their sperm can decline. Older men are more likely to have sperm with genetic mutations that may be passed on to their children. This can be linked to an increased risk of certain genetic disorders in children, such as schizophrenia or autism.

I would like to submit that while a father's lifestyle does not directly alter his child's DNA before conception, his habits can influence the health of the sperm and the potential for genetic or epigenetic changes that may affect the child's development and long-term health.

Making healthier lifestyle choices, such as quitting smoking, limiting alcohol, eating a balanced diet, and reducing stress, can help improve sperm health and reduce these risks." (Curled from page 4 of "Parenting: Rewriting the Narrative", by the same author).

Health Conditions and Sauna Risks

Saunas offer numerous health benefits but can also pose serious risks for individuals with certain medical conditions like cardiovascular conditions (heart disease, high/low blood pressure, arrhythmias), even though studies confirm that sauna use may improve circulation and reduce blood pressure over time, as regular sauna bathing is linked to a lower risk of heart disease (JAMA, 2015). The fact remains that increased heart rate by 30–50% can trigger heart attacks in at-risk individuals just as high heat lowers blood pressure, which can cause dizziness or fainting. In addition, sudden cold exposure, like an ice bath after a sauna, can cause a dangerous spike in blood pressure and arrhythmias.

Therefore, individuals with unstable heart disease, recent heart attacks, or severe arrhythmias should be careful in saunas. This precaution might be applicable to certain individuals who have extremely high or low blood pressure. Thus, does this imply that they should avoid saunas completely and throw away the advantages just

because of the disadvantages? I do not think so. They should just be careful. They should limit sauna time to 10–15 minutes. They should avoid extreme temperature shifts like jumping into cold water. They should sit up slowly when exiting to avoid dizziness. They should stay hydrated and consult a doctor first.

For the umpteenth time, people with respiratory conditions like asthma, COPD, chronic bronchitis, and COVID-19 recovery should be conscious of their time in the sauna, despite the sauna's warm air may help relax airways and reduce symptoms of mild asthma and can loosen mucus for people with chronic bronchitis. The potential risk of saunas is that high heat can trigger bronchospasms in asthma patients. In fact, low oxygen levels in some sauna environments can cause breathing difficulties. As it were, steam saunas may worsen symptoms for those with chronic lung diseases (COPD). Likewise, people recovering from COVID-19 or pneumonia may struggle with heat exposure.

While people with severe asthma or COPD, or anyone recovering from respiratory infections, should really be cautious, there are safety considerations they must observe as they use a sauna. For instance, let them use dry saunas instead of steam rooms. Let them bring an inhaler if needed. Let them exit immediately if they experience difficulty breathing.

Can a Diabetic Use a Sauna?

Some studies suggest sauna use may help improve insulin sensitivity. For instance, Laukkanen et al. (2015) investigated the effect of passive heating on heat shock protein 70 and interleukin-6 as a potential mechanism for heat therapy to enhance glucose regulation, and they discovered that regular sauna use (4-7 times per week) is related to a lower risk of cardiovascular disease and type 2 diabetes, probably due to enhanced metabolic performance. Faulkner et al. (2017) also found that passive heat exposure (hot water immersion at 40°C) elevated IL-6 and HSP70, which may improve glucose absorption and insulin sensitivity. Similarly, in previous studies, Hooper (1999) and Gupte et al. (2009) suggested that chronic heat exposure improved blood flow and insulin sensitivity, with case studies showing reduced blood glucose in diabetic patients and heat therapy in mice increasing HSP72 expression and improving insulin signalling in skeletal muscle, respectively. Brunt et al. (2016) found that repeating heat therapy for 8 weeks enhanced insulin sensitivity and glucose regulation in sedentary people. Furthermore, Fatahi et al. (2018) found that both dry and steam sauna programmes positively impacted glucose levels, with dry sauna exercises having a lower impact on sleep quality. The study involved 36 middle-aged men aged 45-60 years in

Kermanshah, Iran, and assessed the effects of 12 weeks of sauna (dry and steam) on fasting glucose levels, sleep quality, and cortisol hormone levels.

However, I like to draw attention of my esteemed reader to some potential risks. It is well emphasized in this piece that excessive sweating can cause dehydration, which worsens blood sugar control, and because saunas lower blood sugar levels, certain individuals with this condition may face the risk of hypoglycemia (dangerously low blood sugar). Again, neuropathy, nerve damage common in diabetes may prevent sensing overheating or dehydration.

Although people with poorly controlled diabetes, and the diabetics with nerve damage (neuropathy) or circulation issues should take precautions, there are some safety considerations rather than completely abstaining from the sauna. They should check blood sugar levels before and after sauna use in addition to stay hydrated and avoid overheating and limiting each of their sessions to 10–15 minutes maximum.

Can a Pregnant Woman Use a Sauna?

Are you pregnant and want to use a sauna? Although a client once argued with me that her husband was more pregnant than she was, and yet he used the sauna! No matter how big the stomach of a man is, he does not have

a foetus in it, so no living being can be affected by the heat. A pregnant lady might be tempted by the potential benefits of a sauna, including helping with muscle relaxation and stress; however, exposure to heat raises core body temperature, which can increase the risk of birth defects, especially in the first trimester. While dehydration and dizziness are more common during pregnancy, the expectant mother should be aware that heat stress can lower blood pressure, potentially reducing blood flow to the baby.

Therefore, women in their first trimester have the highest risk and must be careful. Furthermore, anyone experiencing pregnancy complications, like preeclampsia or gestational diabetes, should steer clear of saunas. But should they completely log themselves out of saunas? No! It is just that during pregnancy, they should avoid high-heat saunas and opt for a mild infrared sauna if necessary. They should limit sessions to 5–10 minutes. They should also stay hydrated and exit immediately if feeling dizzy.

In addition, severe heat exposure during pregnancy has been linked to various central nervous system birth abnormalities, such as anencephaly and spina bifida (Ravanelli et al., 2019). This precaution is very important because it does not appear in this part of the world that we control heat exposure in sauna chambers.

Despite sauna bathing raising body temperature by 0.5-1.3 degrees Celsius for 10-30 minutes and being linked to congenital abnormalities, most notably anencephalus, Uhari et al. (1979), who investigated the potential teratogenic effect of hyperthermia, which can result in congenital abnormalities in humans, discovered that congenital abnormalities caused by heat are uncommon in Finland, with anencephaly occurring in approximately 0-32/1000 births. In fact, the incidence of anencephaly is the lowest in the world (Rapola et al., 1978) despite most women participate in weekly sauna bathing during pregnancy.

Can you Use a Sauna with Neurological Conditions?

Are you diagnosed with multiple sclerosis, epilepsy, or stroke history, and do you want to use saunas? No doubt, sauna may help reduce muscle stiffness in mild cases of Multiple Sclerosis (MS); heat exposure can worsen neurological symptoms (Uhthoff's phenomenon), causing weakness or blurred vision. Likewise, saunas may trigger seizures in epilepsy due to dehydration or overheating, just as heat exposure can affect blood pressure regulation, increasing stroke risk.

Although saunas can be addictive, people with MS are prone to heat sensitivity, and anyone with uncontrolled epilepsy or a history of frequent seizures or stroke

survivors with unstable blood pressure should be cautious. If they must use a sauna, they should opt for lower-temperature saunas (infrared may be safer). They should also avoid prolonged exposure—10 minutes is appropriate—and they should exit immediately if they experience fatigue, dizziness, or weakness.

Can you Use a Sauna if you are Physically or Mentally Ill?

Although physically ill individuals, like those with fever, infection, or chronic illnesses like severe heart disease, should avoid saunas, mentally ill individuals can use a sauna if they are stable and supervised. However, those with severe cognitive impairments, schizophrenia, or extreme anxiety should be cautious due to potential overheating or panic. As to whether or not a blind or deaf person uses a sauna, I am glad to tell you that blind individuals can use a sauna safely if they are familiar with the space or have assistance. I have seen this a few times in sauna chambers. Deaf individuals can also use a sauna without issues, but if an emergency arises, visual alert systems or assistance might be needed.

Kidney Disease

Can you safely use a sauna despite having kidney disease? It has been argued that sauna use may help with toxin elimination in people with mild kidney issues; it is a

known fact that sauna increases fluid loss through sweating, which can strain compromised kidneys. Likewise, there is a risk of electrolyte imbalance (low sodium, potassium loss). Furthermore, people with severe kidney disease struggle to regulate fluids; this further makes dehydration dangerous. Thus, people with kidney failure or those on dialysis should avoid saunas until they are given a clean bill of health. Am I discouraging sauna for these great people? Not at all. If they must be in the sauna, let them drink electrolyte-rich fluids before and after. Let them avoid excessive sweating sessions. Let them consult a nephrologist (kidney specialist) before using saunas.

Blood Clot (thrombus)

Saunas affect circulation, which can influence clot formation in various ways. Sauna has positive effects on blood clots because heat dilates blood vessels, increasing blood flow and potentially reducing clot formation. Likewise, saunas lower blood pressure, which may also reduce clot risk over time. In the same vein, sauna enhances fibrinolysis—the body's natural ability to break down small clots before they cause harm. However, excess sweating without rehydration may increase the risk of clotting. Likewise, a sudden drop in blood pressure can be risky for individuals prone to circulatory issues. If,

therefore, you have a history of clotting issues, it is best to consult a doctor before using a sauna.

My submission to these thoughts is that you should consult your doctor before using a sauna if you have any underlying medical or mental condition, such as cardiovascular conditions (high blood pressure, heart disease), severe anxiety disorders (excess heat can cause panic in some cases), heat sensitivity, or dehydration issues. Do not rely on research findings. You are unique, as well as the sole translator of your story.

A Reminder on Sauna Safety and Tolerability

Can you apply cream while in the sauna? Can you take alcohol before a sauna? Can you take your hypertension medicine and use the sauna immediately? Can the sauna manage cardiovascular disease? Can the temperature be controlled in traditional saunas?

Applying cream

Applying cream to the body before or during a sauna session is not recommended for several reasons. Saunas work by opening pores and encouraging sweating, which helps the body detoxify. Creams and lotions can form a barrier on the skin, preventing normal sweating and detoxification. Another reason is that the sauna's heat can cause creams to become sticky, greasy, or even melt,

leaving the skin feeling unpleasant rather than refreshed. Similarly, certain cream ingredients, such as fragrances or preservatives, can become more irritating in the heat, causing redness, itching, or rashes. In the same vein, creams can transfer to sauna benches and walls, making them greasy and unsanitary for other users.

I have been asked several times when to apply cream. My response is simple. It is best to apply moisturiser after the sauna, when the user has showered and their skin is clean. This helps to replenish moisture lost through sweating, keeping the skin soft and hydrated. My recommendation has always been for a user to prepare his skin for detox by washing his face and body with a gentle, non-drying cleanser to remove dirt, oil, and makeup. This avoids clogged pores and allows his skin to sweat freely. He should drink a glass of water before entering the sauna to stay hydrated. While in the sauna, he should let his skin breathe. Let him avoid touching his face excessively while sweating. Because most saunas allow it, let him rinse with cool water halfway through the session to refresh his skin.

Let him take a lukewarm or cool shower after the sauna to remove sweat, open pores, and refresh his skin. Let him apply a light, hydrating moisturiser or body oil, such as aloe vera gel, hyaluronic acid serum, or a non-comedogenic body lotion, to restore moisture.

I must add this quickly: if he has dry skin, he can use a light moisturiser before the sauna, but nothing too heavy or greasy. In a similar vein, if he has acne-prone skin, he should avoid using oily products before entering the sauna and cleanse immediately afterward.

Alcohol

On alcohol, according to a case analysis conducted by Luurila (1992), alcohol consumption mixed with sauna use can dramatically enhance the risk of sudden death. The researchers also suggested that "natural contraindications", such as viral illnesses, severe chest discomfort, unstable angina pectoris, decompensated heart failure, and strict aortic stenosis, be considered as such.

Antihypertensive Medicine

Furthermore, taking antihypertensive medicine right before bathing is not recommended since it may predispose the individual to orthostatic hypotension. Male reproductive concerns have been suggested as a result of scrotal heat and impaired spermatogenesis. A small study found that sauna use reduced sperm count and motility; however, these effects were reversible within 6 months of stopping (Kukkonen-Harjula & Kauppinen, 2006). On another front, various central

nervous system birth abnormalities, including anencephaly and spina bifida, have been linked to severe heat exposure during pregnancy (Ravanell et al., 2019).
In their submission, Sastriques-Dunlop et al. (2020) asserted that heat therapy (HT), especially whole-body sauna bathing, has shown potential in managing cardiovascular disease, particularly peripheral arterial disease (PAD). Studies show that HT can alleviate PAD symptoms, improve functional capacity, and reduce cardiovascular and limb events.

Can the temperature be controlled in traditional saunas?

Traditional saunas are classified into numerous categories based on their heating technology, structure, and cultural origin. Wood-burning saunas emit a mild, humid heat with a rich wood aroma, whereas electric saunas use built-in fans to circulate air and spread heat evenly. As I examined the chamber construction and the stones, I asked myself many questions about the heating process and how heatstroke can be avoided. My submission is that traditional saunas may regulate temperature by regulating the fire, adding or removing water on the stones, ventilation, and having users sit at different levels. Traditional saunas are classified into four types: wood-burning saunas (smoke and stove saunas), electric heater saunas, steam saunas ("banya" or

"hammam"), Turkish hammams and tent or portable saunas.

Natural airflow in wood-burning saunas keeps them peaceful; however, built-in fans in electric saunas can make them noisy. I had to stop using a hotel's sauna because the noise from the built-in fan bothered me. Furthermore, while ventilation fans in some saunas can make noise, they are often quieter than mechanical fans. If some people are concerned about noise, as I was previously, a wood-burning sauna or a high-quality electric heater with a silent operation option would be excellent.

If you are in a sauna where the fire is not regularly regulated, the water on the stove is not constantly checked, or the lower layer or floor is extremely hot, please leave the chamber. Your incessant staying inside is harmful.

What Age should a User Avoid Saunas?

Sauna use is not a one-size-fits-all activity, although some conditions can impact its appropriateness. Because of poor body temperature control, older persons may be more prone to overheating or dehydration. Young children under the age of six should avoid saunas owing to heat tolerance concerns. Both age groups should stay hydrated, avoid prolonged sauna sessions, and get

medical attention if they have any underlying health issues.

Can the Usage of a Sauna Hasten Death?

Yes, individuals passed away in sauna chambers. Heatstroke may kill quickly! The two case reports by Wegner et al. (2021) as mentioned above show the significance of heat exposure in sauna-related mortality. A 77-year-old man and a 73-year-old lady died in saunas at 78°C and 70°C, respectively. Autopsies and follow-up studies revealed no other cause of death save heat shock. McIver and Zia (2025) reported a classical heat stroke caused by prolonged sauna use, with multiorgan complications including seizures, liver injury, kidney injury, disseminated intravascular coagulation, rhabdomyolysis, and type 2 myocardial infarction. Likewise, Kawahara et al. (2025) studied extremely unwell patients who were transported from sauna facilities to an emergency care centre. The study discovered that 25 patients, largely men, had underlying medical issues such as hypertension and diabetes. The predominant diagnoses were out-of-hospital cardiac arrest, head injuries, heat stroke, and seizures. 75.0% of cardiac arrest patients reported symptoms in baths. Four individuals died in the ER, 17 were admitted, and three died while hospitalised. The study emphasises the

importance of raising awareness and implementing preventive actions among people at high risk.

Laukkanen et al. (2015) conducted an Eastern Finland study to explore the relationship between sauna bathing frequency and duration and the risk of sudden cardiac death (SCD), fatal coronary heart disease (CHD), fatal cardiovascular disease (CVD), and all-cause mortality. The study included 2315 middle-aged men aged 42 to 60 years. The findings revealed that sauna bathing sessions were related to a decreased hazard ratio of SCD (0.77) for 2 to 3 sessions per week and 0.37 for 4 to 7 sessions per week. Similar relationships were discovered for CHD, CVD, and all-cause mortality. This study provides prospective proof that sauna bathing reduces the incidence of SCD, fatal CHD, fatal CVD, and all-cause mortality in the general male population. Results indicate that sauna bathing is a beneficial health habit.

Furthermore, I critically searched for fire safety standards, but I have yet to find one in the saunas. However, fire safety requirements are critical for ensuring a safe environment for users. These rules include hiring a professional electrician to install and maintain heaters, keeping correct clearances from combustible items, and equipping electrical equipment with ground fault protection. Regular inspections are required for any materials left on the heater, and a steel mesh guard

should be installed on top. It is prohibited to place towels or combustibles over the heater. Heating systems should be separated by a fire-resistant barrier, and open flame heaters should be avoided. Automatic high-temperature shutoff switches are required to prevent overheating of the unit. The switch should not be bypassed or deleted.

Chapter SIX

The Recommendations

This book attempts to give a brief suggestion to sauna customers, sauna service providers, and legislators, as outlined below.

The Sauna Users

It is convenient to request government interventions to address the safety issues, even though I advise users to protect themselves by selecting trustworthy sauna centres, making sure hygiene and safety procedures are followed, avoiding unclear pricing or dubious services, and being wary of establishments that operate behind closed doors.

All users see sauna a popular type of exercise, that has been linked to several health advantages, especially in Nordic countries. However, there are other fallacies and concerns linked with sauna use, including detoxification, weight loss, and heart health. The liver and kidneys are the body's primary detoxification organs; hence, saunas may not be effective for fat removal. Additionally, lengthy sauna sessions might cause dehydration, which should be avoided. The combination of sauna and alcohol raises the risk of dehydration, hypotension, arrhythmia, and sudden death. Drinking beer before or after a sauna is not

recommended for anyone, despite the fact that I have heard many men boast about it.

Anyone who consumes beer before or immediately after using a sauna runs the risk of becoming dehydrated. Saunas, for example, generate excessive sweating, which results in fluid loss. Alcohol is a diuretic, meaning it causes the body to produce more pee and dehydrate itself. This can cause dizziness, migraines, and even fainting.

Another factor is that alcohol use puts strain on the heart. Both saunas and alcohol induce blood arteries to dilate, lowering blood pressure. This combination can cause dizziness, irregular heartbeats, and possibly hazardous decreases in blood pressure, raising the risk of fainting and heart issues. Alcohol can disrupt the body's temperature regulation. In a sauna, where the body is already working hard to cool itself by sweating, alcohol might make it difficult to detect when it is overheated, leading to heat exhaustion or heat stroke. Few individuals are aware of this.

Alcohol consumption can slow recovery and limit health advantages, keeping in mind that saunas are designed to relax muscles, enhance circulation, and purify the body. Alcohol counteracts these benefits by straining the liver, decreasing circulatory efficiency, and compromising muscle recovery. Peer-reviewed studies have shown that

drinking before sauna sessions can cause dizziness, impaired coordination, and even fainting. This tendency is exacerbated in hot, slippery conditions. This may raise the danger of falls, burns, and other incidents. If you drink alcohol because the hops in it relax you, there are various safe non-alcoholic drinks with hops that can help you relax and sleep, such as hops tea, hop-infused sparkling water, and herbal blends. This is the advice I have provided to a couple of my clients who use beer to relax or sleep.

To stay hydrated, I recommend drinking plenty of water or electrolyte-rich drinks before entering the sauna. Similarly, after the sauna, rehydrate with water, coconut water, or herbal teas before drinking alcohol (if necessary). Hydrating meals such as cucumbers, watermelon, oranges, celery, and other high-water-content foods can help you stay hydrated. Strive not to consume alcohol or coffee immediately after using the sauna because both might dehydrate you and strain your cardiovascular system. It is best to wait at least 1-2 hours before drinking alcohol or coffee after a sauna session.

Before utilising a sauna, make sure you do not have high blood pressure, heart problems, or are pregnant. In places like Kigali, where sauna use is prevalent, it is critical to follow general health and safety requirements

and check with healthcare specialists before using saunas.

To ensure maximum safety, users should stay hydrated, watch their time, understand their limits, and big meals, gradually cool down, and seek medical guidance.

The Sauna Providers

Unsanitary conditions, overheating, false health claims, sexual exploitation, privacy breaches, underqualified employees, overcharging, and hazardous chemicals are just a few of the unethical actions that certain sauna centres participate in. Burns, fungal and bacterial infections, and respiratory problems are just a few of the health risks that can result from these behaviours. In addition to engaging in illicit activities like prostitution, skin and respiratory problems can also be contacted.

Maintaining sufficient ventilation, frequent cleaning, monitoring temperature and humidity, providing first aid and emergency measures, and displaying clear signs are all ways providers may assure a high-quality, safe, and delightful sauna experience. Furthermore, to ensure user comfort and experience, providers should maintain high-quality equipment, monitor occupancy, ensure accessibility, provide refreshment stations, and offer a variety of saunas. Customer education and involvement should include teaching users on correct sauna use,

providing wellness packages, collaborating with local health organisations, conducting special events, and implementing sustainable practices.

NB

To help sauna providers honour shared responsibility in the "holy place" of heat and healing, I have included in the appendix a sauna use agreement form that they can use with their clients.

The Policy Makers

Governments should prioritise sauna safety because of its implications on public health, consumer protection, and overall well-being. High sauna temperatures can cause heat exhaustion, dehydration, and heat stroke, particularly in people with heart diseases, high blood pressure, or respiratory problems. Proper safety measures can help to prevent medical emergencies, accidents, and fatalities, as well as safeguard consumers and uphold business standards. Governments should control construction materials, heating systems, and emergency exits to provide a safe environment for users. Eco-friendly sauna heating and sustainable designs can help to improve energy efficiency and the environment.
Legal and liability risks can be mitigated by enacting appropriate legislation. Cultural and recreational value can be achieved by assuring safe sauna experiences,

which benefit the tourism and wellness businesses. Africa's governments should enact clear safety standards to safeguard citizens, eliminate health hazards, and promote responsible sauna use. Examples of such rules are Uganda's National Bureau of Standards (UNBS) and the National Building Review Board (NBRB) in Uganda, which highlight the significance of proper safety measures and regular maintenance.

Government officials and lawmakers play critical roles in assuring sauna safety, accessibility, and sustainability. Health and safety regulations should create industry standards, impose hygiene routines, necessitate emergency readiness, and specify clear user guidance. Accessibility and public wellness initiatives should promote public saunas, incorporate disability-friendly design elements, support sauna therapy in healthcare, create public awareness campaigns, and encourage workplace wellness programmes. Encouraging sustainable sauna designs, regulating wood-burning saunas, supporting smart sauna technologies, motivating green energy consumption, and tracking developing trends are all crucial. Sauna consumers, providers, and policymakers can all have a safe and happy sauna experience if they follow these guidelines.

As a sauna user, what have you witnessed in saunas that you believe the government should regulate to keep

consumers safe? As an individual, I would ask the government to create clear safety guidelines. My top priority is to set temperature and humidity limitations to avoid overheating and dehydration concerns. I would like the government to enforce enough ventilation to minimise carbon monoxide buildup, particularly in wood-fired saunas. In addition, I would like the government to develop sanitation criteria for cleaning and maintaining sauna rooms.

Furthermore, I would like the government to issue licences exclusively to companies that are qualified to operate saunas, as well as conduct regular inspections. By this, I mean that the government requires both public and commercial saunas to be licensed and inspected on a regular basis. The government should also guarantee that facilities follow fire safety laws and electrical requirements. In fact, I would want to request that the government require periodic inspections of heating elements, ventilation, and hygiene conditions both inside and outside sauna rooms.

Anyone familiar with most saunas will agree that health and safety guidelines are urgently needed. The government should require sauna service providers to post explicit warning signs about sauna use, such as time limitations and health risks for persons with heart disease, pregnancy, or other medical issues. The

government should impose emergency shut-off systems in the event of overheating or equipment failure. In addition, the government should require sauna service companies to have easily accessible emergency exits and alarms.

Concerning staff training and instruction, the government should mandate that public sauna operators be trained in first aid and emergency response. They should also be required to teach employees on proper maintenance, temperature management, and customer safety.

In all the saunas I have visited, no service provider provided user recommendations or public awareness. I believe the government should require sauna service providers to educate the public on safe sauna use, such as hydration, cooling-down techniques, and recommended duration. They should be designed to include guidelines for children, the elderly, and people with medical concerns.

When you next visit a sauna, look around for fire safety and prevention signs. You might be convinced that the government should require fire-resistant materials in sauna construction. The government should require fire extinguishers, smoke detectors, and fire suppression systems in public saunas, as well as enough space between heating components and combustible objects.

The government should also impose tight water consumption rules near electrical components to minimise shocks or short circuits, as well as require professional installation and frequent inspections of electrical wiring and heating elements.

Saunas have become widespread throughout Africa, particularly in Rwanda, necessitating regulation of private saunas. The government should make safety suggestions to home sauna owners, such as adequate installation, ventilation, and fire safety precautions. There should also be requirements for rental buildings or shared-use private saunas.

This book contends that by enforcing these standards and assuring regular inspections, governments may reduce health risks while improving sauna safety for all users.

REFERENCES

Boraczyński, T., Boraczyński, M., Podstawski, R., Borysławski, K., & Jankowski, K. (2018). Body mass loss in dry sauna and heart rate response to heat stress. Revista Brasileira de Medicina do Esporte, 24, 258-262.

Brunt, V. E., Howard, M. J., Francisco, M. A., Ely, B. R., & Minson, C. T. (2016). Passive heat therapy improves endothelial function, arterial stiffness and blood pressure in sedentary humans. Journal of Physiology, 594(18), 5329–5342. https://doi.org/10.1113/JP272453

Duch, K., Michnik, A., Pokora, I., & Sadowska-Krępa, E. (2020). Modification of blood serum DSC profiles by sauna treatments in cross-country skiers during the exercise cycle. Journal of Thermal Analysis and Calorimetry, 142, 1927-1932.

Ernst, E. Pecho, P. Wirz, T. Saradeth Regular sauna

bathing and the incidence of common coldsAnn. Med., 22 (1990), pp. 225-227

Eur. J. Appl. Physiol. Occup. Physiol., 58 (1989), pp. 543-550

Fatahi, J., Baigzadeh, M., & Ghahramani, M. (2023). The Effect of 12 Weeks of Dry and Steam Sauna on Fasting Glucose, Sleep Quality, and Cortisol Hormone in Middle-Aged Men. Journal of Nutrition, Fasting and Health, 11(3), 225-236. DOI: 10.22038/JNFH.2023.75385.1470.

Faulkner, S. H., Jackson, S., Fatania, G., & Leicht, C. A. (2017). The effect of passive heating on heat shock protein 70 and interleukin-6: A possible mechanism for heat therapy to improve glucose regulation. Temperature, 4(4), 370–381

Fedorchenko, Y., Fedorchenko, M., Yessirkepov, M., & Bekaryssova, D. (2025). Sauna therapy in

rheumatic diseases: mechanisms, potential benefits, and cautions. Rheumatology International, 45(5), 94. DOI:

Garolla, A., Torino, M., Sartini, B., Cosci, I., Patassini, C., Carraro, U., & Foresta, C. (2013). Seminal and molecular evidence that sauna exposure affects human spermatogenesis. Human Reproduction, 28(4), 877-885. doi: 10.1093/humrep/det020

Garolla, M. Torino, B. Sartini, I. Cosci, C. Patassini, U. Carraro, C. Foresta Seminal and molecular evidence that sauna exposure affects human spermatogenesis Hum Reprod., 28 (2013), pp. 877-885

Gravel, H., Behzadi, P., Cardinal, S., Barry, H., Neagoe, P. E., Juneau, M., ... & Gagnon, D. (2021). Acute vascular benefits of Finnish sauna bathing in patients with stable coronary artery

disease. Canadian Journal of Cardiology, 37(3), 493-499.

Gryka, W. Pilch, M. Szarek, Z. Szygula, L. Tota The effect of sauna bathing on lipid profile in young, physically active, male subjects Int. J. Occup. Med. Environ. Health, 27 (2014), pp. 608-618

He, L., Krüerke, D., & Zhao, Z. (2024). Robert Podstawski*, Krzysztof Borysławski 2, Natalia Maja Józefacka 3, Jadwiga Snarska, Bożena Hinca 4, Elżbieta Biernat 5 and Anna Podstawska http://dx.doi.org/10.3389/fpubh.2023.1303804

Hitsuwari, J., Hayashi, T., Katarina, W., Du, M., Morita, M., Takiguchi, S., ... & Nomura, M. (2024) Sauna and Mindfulness: How Sauna Bathing Affects Psychological States and Traits Related to Bodily Sensations and Emotions. doi.org/10.21203/rs.3.rs-4991388/v1

Hooper, P. L. (1999). Hot-tub therapy for type 2 diabetes mellitus. The New York Academy of

Sciences, 886(1), 813–816. 6632.1999.tb09459.x

Hussain, J. N., Greaves, R. F., & Cohen, M. M. (2019). A hot topic for health: Results of the Global Sauna Survey. Complementary Therapies in Medicine, 44, 223-234

Hussain, J., & Cohen, M. (2018). Clinical Effects of Regular Dry Sauna Bathing: A Systematic Review. Evid Based Complement Alternat Med, 2018, 1857413. Doi 10.1155/2018/1857413

Hussain, J., & Cohen, M. (2018). Clinical Effects of Regular Dry Sauna Bathing: A Systematic Review. Evid Based Complement Alternat Med, 2018, 1857413. doi: 10.1155/2018/1857413

Jang, M. H., Park, S. Y., Kim, S. D., & Lee, S. H. (2025). Heat Therapy as a Viable Treatment for Peripheral Artery Disease-A Mini Review. Journal

of Vascular Research.

Jeoung, Y.C. and Lee (2015) A study of relationship between frailty and physical performance in elderly women J Exerc Rehabil, 11 (2015), pp. 215-219

Kaiser, P., Seeher, U., Krasniqi, A., Keiler, A., Crazzolara, R., & Meryk, A. (2023). Injuries related to sauna bathing. Injury, 54(7), 110825.

Kanimozhi, K. K., Ravi, P., Vijayakumar, V., & Kuppusamy, M. (2024). Sauna bath reduces blood pressure in healthy adult volunteers: A meta-analysis of RCTs and quasi-experimental studies. Advances in Integrative Medicine.

Kawahara, N., Matsui, H., & Morishita, K. (2025). Clinical characteristics of severe patients transferred from sauna facilities. Heliyon, 11(6).

Kukkonen-Harjula K, Oja P, Laustiola K, Vuori I, Jolkkonen J, Siitonen S, Vapaatalo H.(1989)

Haemodynamic and hormonal responses to heat exposure in a Finnish sauna bath. Eur J Appl Physiol Occup Physiol.;58(5):543-50. doi: 10.1007/BF02330710. PMID: 2759081.

Kunutsor, S. K., Khan, H., Laukkanen, T., & Laukkanen, J. A. (2018). Joint associations of sauna bathing and cardiorespiratory fitness on cardiovascular and all-cause mortality risk: a long-term prospective cohort study. Annals of medicine, 50(2), 139-146.

Kunutsor, S. K., Laukkanen, T., & Laukkanen, J. A. (2018) Longitudinal associations of sauna bathing with inflammation and oxidative stress: the KIHD prospective cohort study. Annals of Medicine, 50(5), 437–442.

Kunutsor, T. Laukkanen, J.A. Laukkanen Sauna bathing reduces the risk of respiratory diseases: a long-term prospective cohort study Eur. J.

Epidemiol., 32 (2017), pp. 1107-1111 https://doi.org/10.1007/s10654-017-0311-6

Laukkanen, J. A., Laukkanen, T., & Kunutsor, S. (2019, April). In reply—sauna bathing and healthy sweating. In Mayo Clinic Proceedings (Vol. 94, No. 4, pp. 727-728).

Laukkanen, T., Kunutsor, S. K., Khan, H., Willeit, P., Zaccardi, F., & Laukkanen, J. A. (2018). Sauna bathing is associated with reduced cardiovascular mortality and improves risk prediction in men and women: a prospective cohort study. BMC medicine, 16, 1-14.doi.org/10.1186/s12916-018-1198-0

Laukkanen, J. A., Kunutsor, S. K., Zaccardi, F., & Laukkanen, T. (2015). Association between sauna bathing and fatal cardiovascular and all-cause mortality events. JAMA Internal Medicine, 175(4), 542–548.

https://doi.org/10.1001/jamainternmed.2014.8187

Lee, E., Laukkanen, T., Kunutsor, S. K., Khan, H., Willeit, P., Zaccardi, F., & Laukkanen, J. A. (2018). Sauna exposure leads to improved arterial compliance: findings from a non-randomised experimental study. European journal of preventive cardiology, 25(2), 130- 138.

Lunetta, P., Kriikku, P., Tikka, J., & Ojanperä, I. (2020). Fatal α-PVP and amphetamine poisoning during a sauna and autoerotic practices. Forensic Science, Medicine and Pathology, 16, 493-497

Luurila, O. J. (1992). The sauna and the heart. Journal of internal medicine, 231(4), 319-320. doi: 10.1111/j.1365-2796.1992.tb00938.x

Kukkonen-Harjula, K., & Kauppinen, K. (2006). Health effects and risks of sauna bathing. International journal of circumpolar health, 65(3), 195-205.doi: 10.3402/ijch/v65i3.18102

McIver, W. J., & Zia, M. (2025). Severe heat stroke with multiorgan failure following collapse in a sauna. BMJ Case Reports CP, 18(1), e262069.

Navarrete-Villanueva, D., Gómez-Cabello, A., Marín-Puyalto, J., Moreno, L. A., Vicente-Rodríguez, G., & Casajús, J. A. (2021). Frailty and physical fitness in elderly people: a systematic review and meta-analysis. Sports Medicine, 51, 143-160.

Nothnagel, A. M., Schwartz, S., Abramovich, I., Schneider, T., Angermair, S., & Treskatsch, S (2024). Death after sauna—case report of a heat stroke associated subarachnoid hemorrhage. Frontiers in Cardiovascular Medicine, 11, 1476962

Ohori, T., Nozawa, T., Ihori, H., Shida, T., Sobajima, M., Matsuki, A., ... & Inoue, H. (2012). Effect of repeated sauna treatment on exercise tolerance

and endothelial function in patients with chronic heart failure. The American journal of cardiology, 109(1), 100-104

Park, J. H., Yoon, J., Yun, H. J., & Lee, J. Y. (2025). The impact of sauna suits on body fluid loss, body temperature, and energy expenditure in athletes. Textile Research Journal, 00405175241294100.

Patrick, R. P., & Johnson, T. L. (2021). Sauna use as a lifestyle practice to extend healthspan. Experimental gerontology, 154, 111509.

Podstawski, R., Borysławski, K., Józefacka, N. M., Snarska, J., Hinca, B., Biernat, E., & Podstawska, A. (2024). The influence of extreme thermal stress on the physiological and psychological characteristics of young women who sporadically use the sauna: practical implications for the safe use of the sauna. Frontiers in Public

Health, 11, 1303804.

Rahinduwa, B. (2024). Sauna Bathing and Cognitive Functions in Eastern Finnish Men–A Prospective Cohort Study.

Rapola, J., Saxen, L., & Granroth, G. (1978). Anencephaly and the sauna. The Lancet, 311(8074), 1162.doi: 10.1016/S0140-6736(78)90348-3

Ravanelli, N., Casasola, W., English, T., Edwards, K. M., & Jay, O. (2019). Heat stress and fetal risk. Environmental limits for exercise and passive heat stress during pregnancy: a systematic review with best evidence synthesis. British journal of sports medicine, 53(13), 799-805.doi: 10.1136/bjsports-2017-097914

Ravanelli, N., Casasola, W., English, T., Edwards, K. M., & Jay, O. (2019). Heat stress and fetal risk. Environmental limits for exercise and passive heat stress during pregnancy: a

systematic review with best evidence synthesis. British journal of sports medicine, 53(13), 799-805.

Razi, Y. (2024). Does acute heat stress modulate human milk production in lactating postpartum women? (Doctoral dissertation). URI

Roque, S., Correia-Neves, M., Mesquita, A. R., Palha, J. A., & Sousa, N. (2009). Interleukin-10: a key cytokine in depression?. Cardiovascular psychiatry and neurology, 2009(1), 187894

Rosnani, J., & Mediarti, D. (2018). Warm steam therapy to increase breast milk production of post-partum mothers. In Proceedings of the 9th International Nursing Conference (pp. 373-378).

Sastriques-Dunlop, S., Elizondo-Benedetto, S., & Zayed, M. A. (2025). Sauna use as a novel management approach for cardiovascular health and peripheral arterial

disease. Frontiers in Cardiovascular Medicine, 12, 1537194.

Uhari, M., Mustonen, A., & Kouvalainen, K. (1979). Sauna habits of Finnish women during pregnancy. British Medical Journal, 1(6172), 1216.

Von Schulze, A. T., Deng, F., Morris, J. K., & Geiger, P C. (2020). Heat therapy: possible benefits for cognitive function and the aging brain. Journal of Applied Physiology, 129(6), 1468-1476.

Wegner, A., Doberentz, E., & Madea, B. (2021). Death in the sauna-vitality markers for heat exposure. International journal of legal medicine, 135, 903-908. doi.org/10.1007/s00414-021-02504-3

Wegner, A., Doberentz, E., & Madea, B. (2021). Death in the sauna-vitality markers for heat exposure. International journal of legal medicine, 135, 903-908. DOI:

Wessapan, T., & Rattanadecho, P. (2015). Heat transfer analysis of the human eye during exposure to sauna

therapy. Numerical Heat Transfer, Part A: Applications, 68(5), 566-582.

Worthen, R. J., Garzon Zighelboim, S. S., Torres Jaramillo, C. S., & Beurel, E. (2020). Anti-inflammatory IL-10 administration rescues depression-associated learning and memory deficits in mice. Journal of neuroinflammation, 17, 1-16. 020-01922-1

Zaccardi, F., Laukkanen, T., Willeit, P., Kunutsor, S. K., Kauhanen, J., & Laukkanen, J. A. (2017). Sauna bathing and incident hypertension: a prospective cohort study. American journal of hypertension, 30(11), 1120-1125.

Appendix 1: SAUNA USE AGREEMENT FORM

Honoring Mutual Responsibility in the Sacred Space of Heat and Healing

Facility/Provider

Name: _____

User's Full Name: _____

Date of Visit: _____

Phone or Contact: _____

PROVIDER'S OBLIGATIONS

As keepers of this traditional wellness space, we commit to:

Uphold cleanliness, cultural integrity, and safety of the sauna environment.

Monitor temperature and ventilation for user safety.

Respect the dignity, privacy, and traditions of all users.

Offer guidance on safe use and encourage culturally appropriate participation.

Provide water, cool-down areas, and traditional healing elements where applicable.

Respond to discomfort or emergencies with urgency and care.

Ensure our attendants are trained in both modern standards and cultural values.

USER'S OBLIGATIONS

As a welcomed guest in this communal healing space, I agree to:

Follow all instructions given by the staff or displayed within the sauna.

Disclose any health conditions or sensitivities before use.

Respect shared space, modesty, and silence where appropriate.

Refrain from alcohol, narcotics, or heavy meals before my session.

Use the sauna for no more than 10–20 minutes per round unless otherwise advised.

Dress appropriately, using a loincloth or cover per cultural guidance.

Remain aware of others and behave with humility and care.

SAFETY PRECAUTIONS

Sauna use is not advised during illness, pregnancy (without doctor's approval), or with serious conditions like heart disease or uncontrolled blood pressure.

Leave immediately if you feel dizzy, light-headed, or short of breath.

Cool down slowly — with fresh air, a cold rinse, or quiet rest.

Hydrate before and after each session.

Do not sleep in the sauna.

Children and elders require special care and supervision.

Discuss use of herbs or oils with the provider to ensure safety for all users.

DECLARATION AND CONSENT

I understand and accept the conditions and responsibilities of sauna use. I affirm that I am using the sauna voluntarily and at my own risk. I release the provider from liability in cases where I have failed to follow precautions or disclose relevant health information.

User's Signature: _____

Date: _____

Provider/Attendant Signature:

_____

Date: _____

Appendix 2: EYE SAFETY IN THE SAUNA

About the Book

Sauna: An Improperly Used Health Therapy – A Provider and User Guide explores the multifacteted benefits of sauna therapy, including relief from muscle discomfort, enhanced blood circulation, reduced tension, and the elimination of metabolic waste. Saunas also support tissue recovery, trigger endorphin release for stress reduction, and aid in detoxification. They promote flexibility and contribute significantly to cardiovascular wellnesss. While these benefits are impressive, the book also cautions that individual health conditions and tolerance levels must be considered. This guide underscores the essential roles of users, service provlders, and policymakers in maximizing the sauna's potential within a culturally sensitive and health-conscious framework.

About the Author

Christian Matthew is a marriage and family therapist. certifted mediator, pastoral counsellor, trainer, scholar, and author. As an itinerant minister of the gospel, he actively engages in premarital counselling, couple coaching, and relationship enrichment programs. He offers professsional counselling and mediation services to individuals, couples, families, and organizations. Dr. Matthew is the CEO of CMAT Family Therapy Services Limited and holds a PhD in Marriage and Family Therapy. His work blends clinical expertise with cultural wisdom to promote holistic well-being acrosss diverse communities.

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