



A Hot Topic: Sauna and Heat Therapies for Health and Longevity

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Disclosure

- I have served as a scientific advisor to Oura Health since October 2021.

Heat Practices as Traditional Practices



Korean Kiln Sauna, Credit: NYT



Turkish Hamam, Credit: Matadoor



First American Sweat Lodge, Credit: Museum of the American Indian



Russian Banya, Credit: Wikipedia



Mayan Sauna, Credit: UC Berkeley



Finnish Sauna, Credit: Sean Fender

Historic Practices and Modern Practices

Historic Sauna Motivations (Perasalo, 1988)

- Sanitization
- Childbirth
- Warm place to live
- Spiritual practices and purification
- Heat as medicine for mind and body

Current Sauna Motivations - Global Sauna Survey (Hussain et al., 2019)

- Relaxation
- Stress management
- Socializing
- Pain relief (back and musculoskeletal)
- Mental health
- Sleep benefits

Benefits of Heat Practices

Epidemiological data (not experimental)

- Reduced risk of **cardiovascular mortality** (Laukkanen et al., 2015)
- Reduced risk of **dementia and Alzheimer's disease** (Laukkanen et al., 2017)
- Reduced risk of **stroke** (Kunutsor et al., 2018)
- Reduced risk of psychotic disorders (Laukkanen et a., 2018)

Experimental data

- Reduced **depression symptoms** (Hanusch et al., 2013; Janssen et al., 2016)
- Improved myocardial perfusion abnormalities in patients with occluded arteries (Sobajima et al., 2013)
- Decreased ventricular arrhythmias in individuals with chronic heart failure (Kihara et al., 2004)
- Transient improvements in lung function in individuals with obstructive pulmonary disease (Kihara et al., 2004)

Cardiovascular Disease

Sudden cardiovascular death (Laukkanen et al., 2015)

- Finnish longitudinal data
- Best outcomes for >19 minutes per session
- 2-3x per week: 23% less likely than 1x per week
- 4-7x per week: 48% less likely than 1x per week

Prevent and treat cardiovascular problems

- Congestive heart failure (CHF): Reductions in premature ventricular contractions (Kihara et al., 2004)
- Ischemic heart disease (IHD): Improved endothelial function (Ihori et al., 2013; Tei et al., 2007)
- Peripheral artery disease (PAD): reduced pain, improved blood flow (Shinsato et al., 2010)

Sauna as an exercise mimetic (Ketelhut et al., 2019; Taggart et al., 1972)

- Increases in sweating, heart rate, breath rate
- Maintaining or promoting muscle mass

Dementia, Alzheimer's Disease & Stroke

Dementia and Alzheimer's Disease (Laukkanen et al., 2016)

- Finnish longitudinal data
- Dementia: 4-7x per week: 66% less likely than 1x per week
- Alzheimer's: 4-7x per week 65% less likely than 1x per week

Stroke (Kunutsor et al., 2018)

- Finnish longitudinal data
- 2-3x per week: 12% less likely to have a stroke
- 4-7x per week: 62% less likely to have a stroke

Sauna targets risk factors for dementia, Alzheimer's Disease, and stroke

- High blood pressure (BP): Sauna use can reduce systolic BP (Luurila et al., 1992)
- Poorer heat shock protein (HSP) expression: Sauna can increase HSP expression (Amorim et al., 2007; Iguchi et al. 2012)
- Poorer blood vascular function: Sauna can improve blood flow (González-Alonso et al., 2007; Kukkonen-Harjula et al., 2006)

Depression

Research to date as of 2019 (Hanusch & Janssen, 2019)

- 4 studies testing hot baths
- 3 studies testing infrared saunas
- 1-6 weeks in duration
- Target core temp range: 100.4 F to 102.2 F
- Slower increase in core body temperature → Larger reductions in depression symptoms

Sampling:

- Warm baths versus sham treatment (Neuman et al., 2017)
- Warm baths versus exercise (Neuman et al., 2018)
- Infrared sauna, single-arm (Hanusch et al., 2013)
- Infrared sauna versus sham infrared sauna (Janssen et al., 2016)

Recommendations – Part 1

- Many heat practices likely impart benefits
 - Hot tubs
 - Dry sauna (wood burning or electric)
 - Steam room
 - Infrared sauna
- Finding what works for you and developing a consistent practice is probably most important
 - Some folks can do heat before bed, for others their heart rate takes time to reduce and heat is best done at least an hour or two before bed
- Electrolyte beverages can help; be wary of sugars and artificial colors

Recommendations – Part 2

- “More Often is Better”
 - Using heat practices 4-7 days per week is best (twice the benefits) of using 2-3 days per week
 - Using 2-3 days per week still reduces cardiovascular risk by 27% relative to people who don’t use any heat practices (0-1x per week)
- “Longer is Better: To a Point”
 - Body heating for 19 minutes yielded more benefits than 11-18 minutes
 - Staying in heat for too long can cause heatstroke and dehydration
- “Hotter is Probably Better: To a Point”
 - ~174 F has been shown to have benefits (Finland)
 - ~140 F has been shown to have benefits (Japan)
 - It might come down to this: If you’re sweating and notice increased heart rate, you are probably experiencing sufficient positive benefits!

A photograph of a wooden sauna interior. The walls, ceiling, and benches are made of light-colored wood. The benches are arranged in a U-shape. In the foreground, a wooden bucket with a handle is placed on a bench. The lighting is warm and soft, creating a cozy atmosphere. The text "Thank You" and "Enjoy the Heat!" is overlaid in the center of the image.

Thank You
Enjoy the Heat!

