



Relax in a Sauna, Hammam or SPA

Dr Lisa RICHARD

Clinique de Réadaptation Cardio-Vasculaire

Saint Orens de Gameville, Toulouse



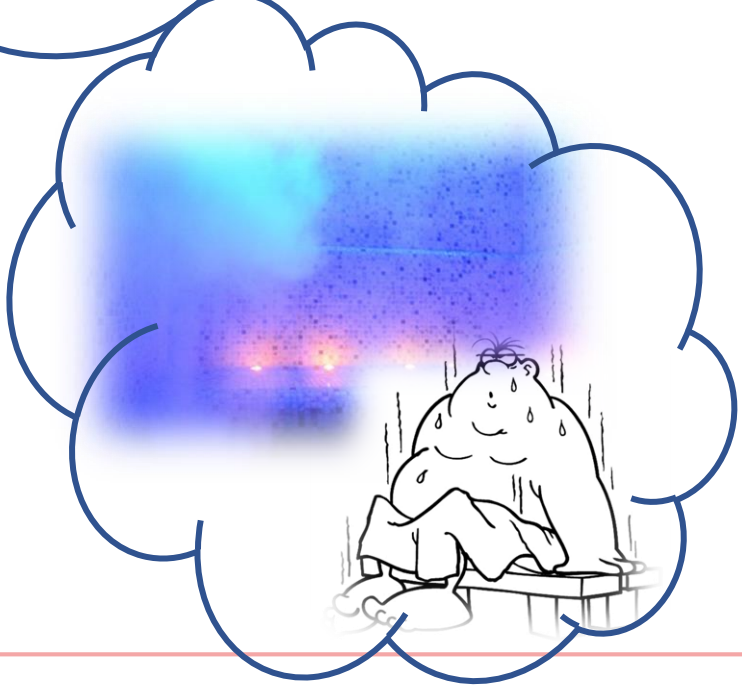
Disclosure Statement of Financial Interest

I currently have, or have had over the last two years, an affiliation or financial interests or interests of any order with a company or I receive compensation or fees or research grants with a commercial company :

Speaker's name : Lisa Richard, Saint-Orens-De-Gameville

I do not have any potential conflict of interest

30^e JESFC Relax...



30^e JESFC What is SPA?



- « Sanitas per aquam »
- City of Spa, Belgium: thermal center since XVIth century
- Establishment promoting well-being and relaxation
- By aquatic activities
- Hot water baths, hydromassage, sauna, hammam
- Rest area





- Traditional activity in Finland for 2000 years
- Increasingly widespread around the world

- Stimulates circulation and breathing
- Reduces muscle tension
- Rejuvenates skin and body through sweating

- In France, generally not recommended for people with cardiovascular disease



30^e JESFC Finnish sauna



- Exposure to dry heat (70-90 ° c)
 - during 5 to 20 min
 - Alternating with cooling periods
 - following with consumption of liquids +++
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- Small piece of unpainted wood (spruce, pine)
 - Dry heat (wood stove, electric stove)
 - Humidity 10-20%, temporarily increased by throwing water on the hot rocks
 - Temperature 80 ° C (face), 30 ° C (floor)



Finnish sauna: Physiological effects on the cardiovascular system



Effect	Direction	Magnitude
Skin temperature	↑	Within a few minutes <u>up to 40°C</u>
Rectal temperature	↑	By 0.2°C at 72°C for 15 minutes By 0.4°C at 92°C for 20 minutes By 1.0°C at 80°C for 30 minutes
Sweating	↑	Sweat is secreted at a rate of 0.6 to 1.0 kg/hour at 80° to 90°C, with an average total secretion of <u>0.5 kg during a typical sauna bath</u>
Skin blood flow	↑	<u>From 5%–10% to 50%–70% of cardiac output (from about 0.5 to 7 L/minute)</u>
<u>Blood flow to internal organs</u>	↓	Renal blood flow is decreased by 0.4 L/minute Splanchnic blood flow is decreased by 0.6 L/minute
Blood flow to muscles	↓	By 0.2 L/minute
<u>Heart rate</u>	↑	Up to 100 beats per minute during moderate sauna bathing in accustomed subjects <u>Up to 150 beats per minute during intense sauna bathing or in unaccustomed subjects</u>
<u>Cardiac output</u>	↑	From 5–6 L/minute <u>up to 9–10 L/minute</u>
Cardiac stroke volume		Unchanged
<u>Systolic blood pressure</u>		Unchanged Or decreased by 8 to 31 mm Hg Or increased by 9 to 21 mm Hg
<u>Diastolic blood pressure</u>		Unchanged Or decreased by 6 to 39 mm Hg

Cardiovascular benefits of sauna bathing

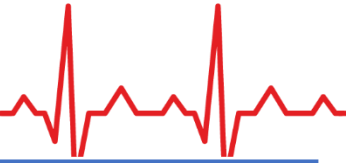


- Prospective cohort study, follow-up 20,7 years, Finland
- 2315 men (42-60 y.o), mean temperature of sauna 79°C

	Sudden Cardiac Death	Fatal Coronary Heart Disease	Fatal Cardiovascular Disease	All Cause Mortality
Frequency of Sauna (multivariable adjusted)	RR	RR	RR	RR
2-3 times /week	-22%	-23%	-27%	-26%
4-7 times /week	-63%	-48%	-50%	-40%
Duration of Sauna Bathing	RR	RR	RR	RR
11-19 min	-7%	-10%	-8%	-9%
> 19 min	-52%	-36%	-24%	-17%

- Increased frequency of sauna bathing is associated with a reduced risk of SCD, CHD, CVD, and all-cause mortality
- Limits:
 - confoundings: socioeconomic status and lower CV risk
 - Caution with participants with poor cardiorespiratory fitness and pre-existing disease

Cardiovascular benefits of sauna bathing



	Type of study	Results	References
Cardiovascular mortality	<ul style="list-style-type: none"> prospective cohort study: 1688 participants, mean age 63, women 51.4%, follow-up 15 years 	<ul style="list-style-type: none"> ↓ CVD mortality linearly with increasing sauna sessions per week and duration of session In both men and women 	<ul style="list-style-type: none"> <i>Laukkanen et al, BMC Med, 2018; 16: 219.</i>
Hypertension	<ul style="list-style-type: none"> Prospective cohort 1261 men, 42-60 yo, follow up 24,7 years 16 patients, untreated hypertension 	<ul style="list-style-type: none"> ↓ RR of hypertension (-17 to 47%) Exercise followed by sauna session: decrease SBP short term and 24 h 	<ul style="list-style-type: none"> <i>Zacchardi et al, American Journal of Hypertension, 2017</i> <i>Gayda et al, Jnl of clinical Hypertension 2012</i>
Coronary Heart Disease /CV risk factor	<ul style="list-style-type: none"> 25 men with at least one coronary risk factor 117 post-myocardial infarction patients, 82% regular sauna bath , follow up 10 years 	<ul style="list-style-type: none"> ↑ vascular endothelial function High tolerance, no ischemic event or arrhythmia 	<ul style="list-style-type: none"> <i>Imamura et al, JACC, 2001</i> <i>Luurila et al, Ann Clin Res 1988</i>
Heart Failure	<ul style="list-style-type: none"> 20 patients, sauna 60°C daily, 2 weeks 30 patients, sauna 60°C daily, 2 weeks 	<ul style="list-style-type: none"> ↑ vascular endothelial function, ↓ symptoms, ↓ BNP ↓ ventricular arrhythmia, ↑ HR variability, ↓ BNP 	<ul style="list-style-type: none"> <i>Kihara et al, JACC 2002</i> <i>Kihara et al, Circ J 2004</i>
Stroke	<ul style="list-style-type: none"> Propective cohort study: 1628 men and women, mean age 63, median follow up 15 years Without history of stroke 	<ul style="list-style-type: none"> ↓ RR 14% (2-3 sessions /week) ↓ RR 61% (4-7 sessions /week) 	<ul style="list-style-type: none"> <i>Kunutsor et al, Neurology, 2018</i>



- **Death related to sauna bathing is rare+++** (alcohol ++, undiagnosed CVD, hyperthermia..)



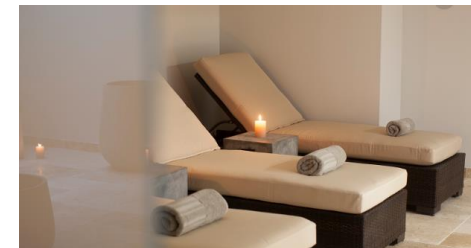
- Low risk: stable angina, controlled hypertension, compensated heart failure
- People already accustomed to sauna bathing
- Short duration of sauna bathing , temperature 60 °to 80 ° C



- Acute decompensation heart failure
- Aevere aortic stenosis
- Uncontrolled hypertension, orthostatic hypotension
- People who consumed alcohol in large quantities




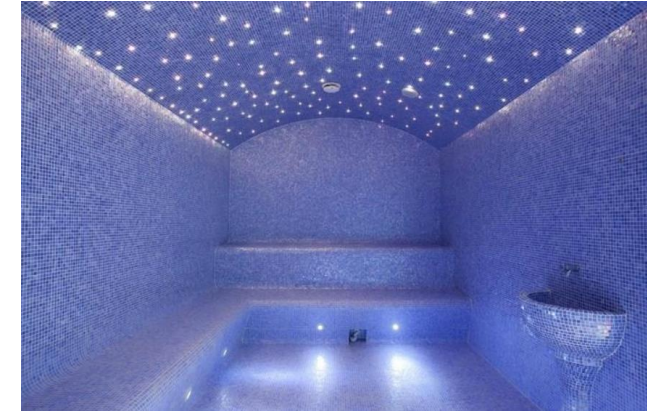
- Temperature should not be too hot : 60°C – 80°C
- First sit on the lower benches for 2-3 minutes, as an adaptation period
- Make short sessions in the sauna (5 -10 minutes)
- After exposure, it is recommended to be well hydrated to avoid hypotensive reactions.
- Avoid immersing yourself in cold water
- Avoid entering in a jacuzzi after the session
- Depending on the level of comfort and energy, the sauna / rest sessions can be repeated 2 to 3 times
- Sauna sessions can be extended from 5 min to 15 min after some adaptation
- Rest periods should last 10 to 15 minutes.
- Avoid sauna bath alone, avoid consumption of alcohol before
- Leave immediately if it is uncomfortable



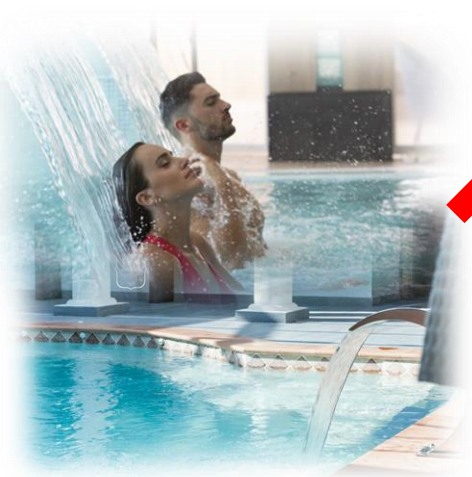
Hammam



- Soft and warm steam bath
- Temperature 45-50°C, 100% humidity
- Deep relaxation promoting sleep, ↓ muscle tension, purifies the skin
- CV effects: vasodilatation, ↑ FC, ↑ cardiac output..
-  **Less efficient thermoregulation compared to sauna**
=> ↑ temperature, , ↑ risk of hypotension, ↑ tachycardia
- Contraindications: similar to sauna bath
- Recommendations:
 - Short periods of time to start (5-10 min)
 - Alternated with cooling periods and rest
 - Leave immediately if it is uncomfortable
 - Not alone for the first time



30^e JESFC Balneotherapy



Specific effects of water immersion

Temperature

Thermoneutrality 32-34°C
Analgesic and muscle relaxant effect

Archimede's principle

Reduced body weight 90%
Obesity, osteoarticular pathologies ++

Hydrostatic pressure

depends on the water height++
↑ preload, ↑ Rap, ↑ Pcap
↓ PR, ↓ HR, ↓ post charge, ↑ SV



Body position

↑ Pcap lying down in water



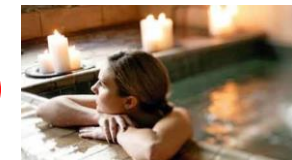
activity in water

e.g: water aerobics

↑ resistance
with speed of movement



Relax





- **Excellent anti stress activity**
- **Sauna: clinical studies have showed cardiovascular benefits**
- **Sauna, hammam, SPA are safe:**
 - => no contraindication for patients with stable cardiovascular disease**
- **Respecting specific recommendations +++**



THANK YOU FOR YOUR ATTENTION