

# Global Spa Summit

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## Medical Hydrology, Balneotherapy, Thalassotherapy and Spa Therapy: Understanding How Research which Validates Spa Therapies can Greatly Increase your Bottom Line

General Session

Monday, May 18<sup>th</sup> 2009 1:45am – 2:15pm

La Salle Cote Jardin, Victoria-Jungfrau Grand Hotel & Spa, Interlaken, Switzerland

### Dr. Zeki Karagulle, President, International Society of Medical Hydrology and Climatology, Turkey

*Scribe: Michelle Punj (Cornell)*

Dr. Geraldine Mitton (introduces Dr. Karagulle)

Dr. Karagulle teaches medical hydrology and climatology. He teaches grads and post-grads, does research and has written many books. He has devoted much time to spa and health resort medicine. He will talk about research on Hydrology, Balneotherapy, Thalassotherapy, etc. He will also talk about how these therapies can increase the bottom-line.

Dr. Zeki Karagulle

It is my great pleasure to be here today and speak about Hydrology, Balneotherapy, Thalassotherapy, and Spa Therapy. I will talk about how these therapies can increase your bottom-line. I come from Istanbul Medical Faculty of Istanbul University where we teach on medical hydrology and climatology at the Department of Medical Ecology and Hydroclimatology.



Balneotherapy, Hydrology,  
Thalassotherapy, share one thing in common – water.

**Balneotherapy** is “the therapeutic use of mineral and thermal waters” most through immersion in a bath or body of water. However it also includes drinking and inhalation of water which is done at some spas. This may be hard to understand. It is possible to have mineral water in small particles – ion salts – and it is used in some spas.

**Hydrotherapy** is “the external application of water in any form or temperature (hot, cold, steam, liquid, ice) for healing purposes.” The meaning can imply a type of exercise carried out in a pool – aquatic exercise – on the other hand it includes water jets, douches, body wraps (application of wet towels to the skin), and Vichy treatments. It is associated with water birth in some countries.

**Thalassotherapy** is a comprehensive term that implies the use of the sea – all aspects, above, below, etc. This would include sea mud, seaweed, sea sand, and other sea products. A question to ponder: Is it possible to have thalassotherapy in a big city, like NYC for example, without being by the sea? This is a going on discussion pros are from spa & wellness sector and the contras are the representatives of traditional European spa industry.

To summarize the difference between these treatments:

- Balneotherapy generally uses natural or artificial water. Thermal mineral water is used mostly at a spa. Thalassotherapy implies seawater mostly at the seaside resort spa.
- Hydrotherapy on the other hand consists of the use of ordinary water - tap or low mineralized water.
- Spa is related with water – Spa therapy is a mixed bag of a number of different treatment modalities applied in a spa (health resort).

There are a variety of studies attempting to show the beneficial effects of balneotherapy and spa therapy. An example of a French study “Use of spa therapy to improve the quality of life of chronic low back pain patients” uses a spa package including balneotherapy, mud therapy, and massage. Another example of a study, this one from Turkey, explores a spa therapy program consisting of balneotherapy, massage, hamam or sauna, climate exposure, and travel to and to stay at a spa resort.



As can be seen from these two examples spa therapy concept sometimes called “complex spa therapy” must have balneotherapy. It is the main intervention of any spa therapy regimen. According to tradition in Europe, balneotherapy is often combined with other natural or complementary interventions such as massage and exercise employed according to the given spa resort experience/tradition.

To make it simple, balneotherapy is in the center of the complex spa therapy concept but joins massage, climatotherapy, exercise, mud therapy, hamam/sauna and milieu change. In this context, spa therapy has a special “therapeutic” atmosphere of its own through the change in environment and lifestyle.



When water immersion (bathing, balneotherapy, hydrotherapy) is concerned, there are three types of effects; thermal, mechanical and chemical. Hot water immersion whether it is in mineral or tap water has factors such as temperature, hydrostatic pressure, buoyancy, and viscosity effects. Depending on the temperature of the bathing water thermal effects are; analgesic, muscle relaxation, anti-

inflammatory, etc. Depending on the depth of the bathing medium hydrostatic pressure has effects mainly on cardiovascular and urinary systems; central blood redistribution, ANP (Atrial Natriuretic Peptide) secretion and diuresis. According to Archimedes Law buoyancy enables having easily lying position and ability to float and causes mechanical relaxation. Viscosity affects resistance of motion through water (during walking and exercising) In most diseases you have pain – muscle spasms, increased metabolites, and in several ways this can be mitigated by hot water immersion.

A study of ours on thermal versus isothermal bathing showed that increase in the pressure pain threshold after a thermal bath was superior to the decrease after an isothermal bath. In another study comparing thermomineral versus tap water bath we showed that that thermal water has the ability to increase the pressure pain threshold significantly more than the tap water.

Another study shows the effects of a thermal sulfur bath on adjuvant arthritis. In the sulfur treated rats, the arthritis is delayed, and there was a rapid decrease of symptoms. Is this the case for humans? A meta-analysis shows sulfur water has the same effect on humans as in rats. To define water as sulfur water it must have 1miligram/litre of sulfur but to have an effect it must have a higher concentration.

Natural mineral waters come from the depth of the earth either naturally (springs) or artificially (boring) with a mineral content of at least 1 g/L and natural thermal waters at a temperature of at least 20°C. The major minerals that are dissolved in mineral waters are sodium, calcium and magnesium and the major anions are chloride, hydrogen carbonate and sulfate. There are minimum concentrations of minerals and other chemical ingredients which are used to classify the natural waters.

Chemical Ingredients of Mineral Waters	Minimum concentration to classify
Sulfur (S <sup>2-</sup> )	1mg/L
CO <sub>2</sub>	500 or 1000mg/L
Radon ( <sup>222</sup> Rn)	666Bq/L (α-particle)
Salt (NaCl)	1g/L (Salty), 14g/L (Brine)
Na <sup>+</sup>	550mg/L
Cl <sup>-</sup>	850mg/L

Spa therapy promotes a sense of wellbeing. Look at hamams for example. At classical hamams, you come in and rest in an entrance area for a while, and then you go to the real place. In the center a marble stone is located where you lie for 20-30 minutes to enjoy the heat and humidity. Then a classical skin scrubbing, massage, and washing from head to feet. This takes a total of about one hour. In the table the factors that work during a hamam ritual and their putative effects are summarized.

FACTORS	EFFECTS
High Temperature (35-45°C depending upon the season)	Hyperthermia Physical and mental relaxation Pain relief
High Humidity (80-90%, up to 100 % relative humidity)	Intense sweating Detoxification
Peeling; “Kese” and massage	Skin rejuvenation and cleansing
Massage; Foam/Soap massage	Muscle, skin, vascular health
Manipulative maneuvers	Joint and muscle health
Hydrotherapy; Water Pouring, and Washing	Muscle, skin, vascular health

We find that there is a significant decrease in pain in healthy people who have gone through a classical hamam session. Results showed an increase in psychology according to the Likert scale. People become more relaxed after the hamam experience. However, there are more than just pain relieving and physiological effects. In holistic health there are social, psychological, spiritual (relaxation), and physiologic (detoxification and purification) components.

<b>Hamam's Holistic Health Components</b>	
<b>Social</b> "coming together"	Getting contact, recreation, celebration, free time
<b>Psychological</b> "getting away"	Out of daily routine, work, home, stresses and (wo)men!
<b>Spiritual</b> "Relaxation, suggestion and religious belief"	Quite, calming and pampering atmosphere and religious rituals; "gusul/boy abdesti" (total body ablution)
<b>Physiologic</b> "detoxification and purification"	Hyperthermia, sweating cleaning, washing, skin and body treatments

Next, let's talk about the brain, skin, and epithelial cells in airways. When you have a spa treatment, these systems are affected. There are DRI - serotonergic neurons - which play an important role in physiological and behavioral responses during treatments. Activation of DRI serotonergic neurons may play an important role in physiological and behavioural responses during conditions with altered cutaneous or core temperature and osmotic conditions, such as warm water immersion or massage or exercise or exposure to warm ambient temperatures.

As a conclusion balneotherapy (mineral / thermal water immersion) and hydrotherapy cause biological effects, but the mechanisms are not yet fully understood. Besides the above mentioned involvement of brain and the skin the NICE (Neuro-Immuno-Cutaneous-Endocrinal metabolic) systems are the sites that are influenced during treatment sessions.

<b>Biological Effects</b>	<b>Sulfur Water Balneotherapy</b>	<b>Thermomineral Balneotherapy</b>	<b>Tap Water Hydrotherapy</b>
Immuno-modulatory	+++	++?	+?
Anti-inflammatory	++	++	+
Antioxidant	+	+	?
Release of $\beta$ endorphin	?	+	?
Analgesic, pain reduction	+++	++	+
Muscle relaxant	+++	++	+
Mental relaxant	+?	++	+

One model to consider is where pleasure is in the center, surrounded by societal, cultural, spiritual, recreational, medical, and natural. What make spa therapy more attractive are the medical and holistic aspects. It is challenging to figure out how to combine modalities to achieve the best results. Many have holistic effects.

My understanding of how this kind of research can increase the bottom-line for spas is informing the spa wellness sector as a whole and educating staff and customers about the value of adding more mineral water treatments into spa menus. At true thermal spas, people stay longer. People purchase more packages. These treatments are user driven that is they are less depended on spa professionals. They generate more repeat business than regular leisure facilities since there is evidence that they have true beneficial effects. I think in this way you can increase your bottom-line.



The Global Spa Summit is an international organization that brings together leaders and visionaries to positively impact and shape the future of the global spa and wellness industry.