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# History of Hydrotherapy

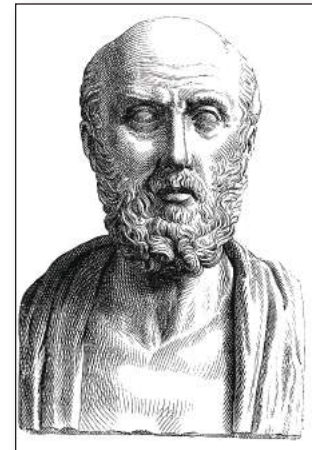
**H**ydrotherapy is defined as using water for therapeutic purposes. Yet it is far more than just that. Hydrotherapy has a rich heritage reaching back 12,000 years — and, possibly to the origins of human-kind. It was well-established and accepted in many of the great and not so great cultures of the past.

Bath ruins date back as far as 4,500 BCE in Pakistan. Greeks, Egyptians, Romans, Persians, Arabians, and Hebrews either used water for cleansing and healing purposes, or incorporated it into religious rituals designed to wash away unworthiness, as well as to please and gain the favor of deity.

One of the first mentions of water therapy in writing involve temples of the Greek God of medicine, Asclepius. At these temples, bathing and massage were part of the treatment for the infirmed. Hippocrates, the “Father of Medicine” used and ascribed water as a beverage to reduce fever and treat an array of diseases. Additionally, he stressed the value of varied temperature baths as a therapeutic resource to combat illness. He is considered by some the “**Father of Hydrotherapy**” also.

Hippocrates is attributed with the following quotes on the medicinal uses of water: *“When pain seizes the side... dissolve the pain by hot applications”, “A soft fomentation soothes pains”, and “... for the bath soothes the pain in the side, chest, and back; concocts the sputa, and allays lassitude; for it soothes the joints and the outer skin, and is diuretic, removes heaviness of the head, and moistens the nose. Such are the benefits to be derived from the bath.”*

Prior to Hippocrates’ experiences in Greece about 500 BCE, the Egyptians thousands of years before recorded their water usage in



**Figure 1.1** Hippocrates - 1881 Young Persons' Cyclopaedia of Persons and Places.

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*“When pain seizes the side... dissolve the pain by hot applications.”*

**HIPPOCRATES**

pictographic murals. They depended heavily upon water for transportation, to fertilize and nourish their crops, cleanse themselves and carry off their dead. Sobek, a crocodile-faced image, was their god of water who they worshiped. They even kept crocodiles as pets and adorned them with jewels to receive blessings from Sobek.

Of all the great civilizations of the past, the Roman empire probably took the bath to its limits. The ancient Roman physicians Galen and Celsus advocated specific baths as an important part of their remedies. After the Emperor Augustus

was cured of an unspecified illness by cold baths, the Roman baths became fashionable.

The baths were famous, and enjoyed by all — from free men to slaves, from citizens to travelers of distant lands. The Romans would divert cold water from the mountains and use it in magnificent buildings that housed

all varying temperature baths controlled by underground furnaces.

The first bath was the *frigidarium* (see opposite page). It used the cold mountain run off diverted via the aqueducts as a pool to

take plunges to close the pores. The furnaces then heated water as it traveled from room to room.

The *tepidarium*, where the water was luke warm. The hot bath was called the *caldarium*.

The Romans created large open courtyards at the baths for people to exercise as well as socialize. There were also libraries, shops and vendors on the outer parameter of the courtyard. In addition to baths and steam rooms, massage

and various medical treatments were available.

As the Roman empire expanded, soldiers would find mineral springs to soak their sore muscles and tired feet in and erect temples to Minerva, the goddess of water. These temples became the cornerstone in spreading hydrotherapy through Europe.



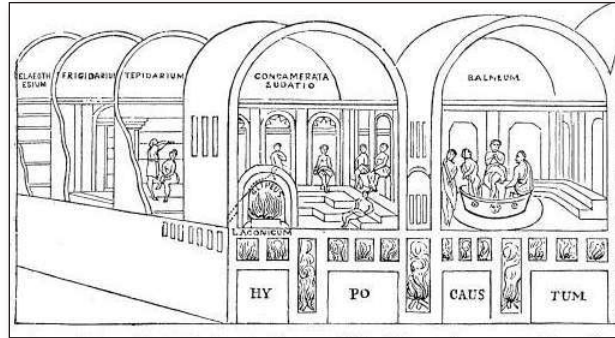
**Figure 1.2** Sobek - Reliefs in Kom Ombo Temple.  
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The great Persian physician, Rhazes, wrote of how to use hot water to force eruptions to quickly emerge. This concept was an important part of hydrotherapy and practiced in India, Turkey, Russia, Finland, and both Americas. By the early 1500's CE, Turkish baths were very popular in Constantinople and as far away as Paris by 1600 CE because of their popularity among french crusaders. The Emperor Charlemagne held court while enjoying medicinal baths.

In 1697 CE, the English physician John Floyer wrote a book on hydrotherapy entitled, *The History of Hot and Cold Bathing*, which went through six editions before it was translated in German in 1749 CE. Floyer's book influenced Johann Hahn, who along with his father and brother, established the foundation for water therapy practices in western and eastern Europe. The three Hahn's practiced their trade throughout the Austro-Hungarian Empire, in particular, in the area known as Silesia (*Czech Republic*).

It was during this time, that a young farm boy, Vincent Prießnitz (pronounced PREES-nits) was influenced by a neighbor who treated him when he mangled his fingers in an accident. By using repeated cold water treatments, his fingers were restored to their full function.

Sometime later, Vincent had his ribs crushed by a horse drawn wagon. The doctors in his town told him he would be crippled for life. But, Vincent was determined to try the same water therapy technique that helped his fingers during his childhood. He forced his ribs back to their original position and wrapped himself with cold wet sheets. It worked beyond his wildest dreams. He eventually was restored to full health with no lasting side effects. News of Vincent's experience soon spread around the countryside and people came seeking to be cured with his cold water treatments.

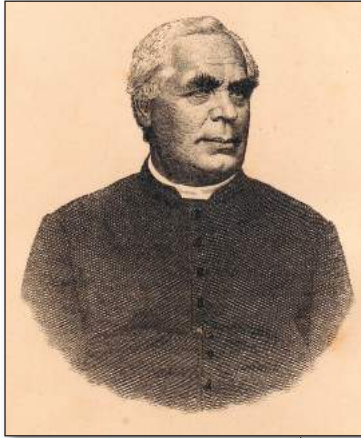


**Figure 1.3** Modern rendition of medieval woodcut depicting the Roman Baths or *Thermae* of Titus. Note the furnace fires beneath the floors to heat the water as it traveled through the different rooms.



**Figure 1.4** Spa patron in a cold body wrap or "cold wet sheet" similar to one made popular by Vincent Prießnitz, circa 1829 CE.

Another person in Bavaria, Sebastian Kneipp, influenced by Prießnitz, was cured of tuberculosis that kept him from entering the monastery to become a Priest. After being cured, he joined the monastery and wrote a book called, *My Water Cure*. In the town where Father Kneipp was stationed,



**Figure 1.5** Father Sebastian Kneipp - from the *Great Kneippbook* 1915.

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*Father Sebastian Kneipp of Bavaria blended herbs with his water cures to intensify the healing properties of his hydrotherapy. Today, the Kneipp Institute is still in the Bavarian part of Germany, where people come from all over the world to learn his water cures.*

there was a druggist who became a close friend. He learned much about natural herbal remedies from this druggist. As a result, his water treatments incorporated herb usage as well as barefoot walks in dewy grass and snow.

Before his death, Father Kneipp started the “Kneipp Institute”, which is still operating today where people from all over the world go to learn and enjoy *Kneipp Therapies*. Kneipp’s and Prießnitz’ work in hydrotherapy, or **hydropathy** as it was called, helped influence others around the world. Some of those influenced include:

- James Gully, England  
*The Water Cure in Chronic Disease*, 1846 CE
- Louis Fleury, France  
*Traite-Pratique et Raisonne D’Hydrotherapie*, 1852 CE
- James Caleb Jackson, USA  
*How to Treat the Sick Without Medicine*, 1874 CE
- John Harvey Kellogg, USA and his book,  
*Rational Hydrotherapy*, 1901 CE

These treatises became the basis of modern techniques used by naturopaths, homeopaths, hydropathic physicians, physical therapists, sports rehabilitation physicians, and of course, health spas.

Other prominent figures in hydrotherapy worth mentioning are: Wilhelm Winternitz, professor of hydrotherapy at the University of Vienna during the nineteenth century who wrote several books and numerous articles on hydrotherapy; and Dr. Simon Baruch, a twentieth century professor of hydrotherapy at Columbia University’ College of Physicians and Surgeons, who fought for legislation in the United States regulating hydrotherapy.

As successful pharmaceutical companies began to financially support medical schools in the U.S., as they offered aid and loans to medical students, and as pharmaceutical manufacturers began to serve on the board of directors at medical schools around the country during the first half of the twentieth century, these financial giants changed the curriculum at schools to downplay the importance of water therapy, herbs and natural healing methods while instead emphasizing drugs to kill disease or surgery to remove the problem.

This change in teaching methods stressed technology in America, however, the use of hydrotherapy, mineral springs and herbal remedies remained constant throughout the European continent. The main difference was that in Europe, doctors embraced both the past of medicine and technological advances from America, while American doctors abandoned time tested methods of hydrotherapy for the quick fix of drugs and/or surgery. As a result, we are seeing a resurgence in popularity with more natural methods of healing in America, as people become dissatisfied with the modern medical and insurance industries.

### **Review Questions — Chapter 1**

1. Hydrotherapy is defined as using what for what purposes?  
*Water for healing purposes.*
2. Who is considered the “Father of Hydrotherapy”? *Hippocrates.*
3. Name three great ancient civilizations that used hydrotherapy: *Greece, Egypt, Rome.*
4. Who was cured of an illness by using repeated hot and cold baths?  
*Emperor Caesar Augustus.*
5. How was Rome most influential in spreading hydrotherapy and through Europe?  
*Roman soldiers built temples to Minerva wherever they found hot springs.*
6. Which Emperor held court while enjoying medicinal baths? *Charlemagne.*
7. Which person cured himself of broken ribs using a body wrap and repeated cold water dousings? *Vincent Priëßnitz.*
8. Which Bavarian cured himself of tuberculosis, wrote a book called “My Water Cure” and blended herbs with his hydrotherapy treatments? *Father Sebastian Kneipp.*
9. What American hydropathic physician wrote “Rational Hydrotherapy” and was instrumental in the rise of a breakfast cereal empire? *John Harvey Kellogg.*
10. During the first half of the twentieth century how did medical school curricula change? *They changed from teaching natural remedies to emphasizing drugs and surgery.*

## Timeline of Hydro & Spa Therapy

Date	Historic Hydrotherapeutic Event(s)
10,000 – 2,000 BCE	Ayurvedic (Sanskrit for LIFE • KNOWLEDGE) medicine develops in ancient India. <i>massage, acupressure, herbal therapy, nutrition, cleansing baths, and oils</i>
4,500 BCE	Pakistani baths. <i>organized system of bathing for ritual and/or cleansing/purifying</i>
3,000 BCE	Egyptian civilization centers around the life-giving Nile River. <i>worship Sobek, god of the Nile, and use water and herbs for healing</i>
2,500 BCE	China develops and uses TCM system of healing. <i>stone &amp; bone needles for acupuncture, acupressure massage, herbs, and moxibustion (heat/thermotherapy)</i>
700 – 200 BCE	Greek civilization utilizes hydrotherapy-based medical system. <i>massage, herbs, hydrotherapy in the way of hot and cold water applications to heal</i>  First SPA located at the Temple of Apollo on the Island of Delphi. <i>series of treatments to purify, cleanse, and anoint with oils prior to seeking the counsel of the Oracle of Delphi</i>  Hippocrates, the Father of Medicine, also can be called the Father of Hydrotherapy. <i>writes down many of his treatments which included water therapies</i>
300 BCE – 300 CE	Romans obtain knowledge of medicine & hydrotherapy from Greeks. <i>Emperor Augustus cured of disease with varying temperature baths, wants every Roman citizen to enjoy the baths; as a result Roman bath houses spread along with the empire throughout much of Europe</i>
800 CE	Turkish hammams are built throughout the Ottoman empire. <i>muslim equivalent to roman baths with heated stone areas for massage, steamy environment, and bathing for ritual cleansing for religious purposes</i>
1200 CE	Crusaders experience hammams while in middle east. <i>steam rooms and bathing</i>
1326 CE	Iron-rich spring with curative powers is rediscovered in Spa, Belgium over the ruins of Roman baths. <i>iron-rich waters good for blood production as well as transporting oxygen to body tissues</i>
1500 – 1600 CE	Renaissance movement in Europe boosts popularity of bathing & hydrotherapy with more than 200 spas built. <i>hydrotherapy in the way of hot and cold water applications to heal</i>
1600 CE	Hammams popular in Paris. <i>steam rooms and bathing</i>
1697 CE	Dr. John Floyer publishes book entitled, <i>The History of Hot &amp; Cold Bathing</i> which is very popular.
1749 CE	German translation of the <i>History of Hot &amp; Cold Bathing</i> is published.
1750 – 1800 CE	Hahn family of physician's influenced by Floyer's book and travel throughout Bavaria teaching & healing.
1806 CE	Swedish massage techniques practiced by Dr. Henrick Ling. <i>effleurage, petrissage, friction, tapotement, and vibration</i>
1829 CE	Vincent Prießnitz establishes spa practicing hydrotherapy treatments in Grafenberg (Jesenik, Czech Republic). <i>includes fresh air, cold water applications (cold wet wrap), diet and exercise</i>
1846 CE	Dr. James Gully publishes in England, <i>The Water Cure in Chronic Disease</i> .
1852 CE	Louis Fleury publishes in France, <i>Traite-Pratique et Raisonne D'Hydrotherapie</i> .
1880 – 1890 CE	Sebastian Kneipp influenced by Vincent Prießnitz heals himself of tuberculosis, becomes priest, writes book entitled, <i>My Water Cure</i> , adds herbs/plants to enhance the healing effects of water, and opens and practice that becomes the Kneipp Institute in Bad Worishofen, Germany still in operation today.
1901 CE	John Harvey Kellogg publishes in the United States, <i>Rational Hydrotherapy</i> , still in print today.
1914 – 1945 CE	Spas and bath towns serve as rehabilitation centers for wounded soldiers during World Wars I and II.
1947 CE	Spas & bath towns in the USA decline in popularity due to emphasis on surgery & drugs over natural methods.
1990 – 2015 CE	Spas & hydrotherapy gain popularity and grow at exponential rate in USA to over 25,000 locations.

2015 © CREATURES OF WATER: History Timeline

**F**ever is defined as an increase in regulated body temperature resulting from an elevation in the thermo-regulatory “set point”.

Another medical term for fever is *pyrexia*. It differs from other forms

of body temperature elevation, such as:

- Hyperthermia due to exercise
- Passive heating from:
  - Steam baths
  - Saunas
  - Sunbathing
- Inability to regulate body temperature from:
  - Heat stroke
  - Malignant hyperthermia

To differentiate between those exceptions listed above and a normal fever, it may be wise to contact your healthcare practitioner; otherwise you may want to treat it using hydrotherapy. Generally speaking, the body begins to feel cold despite increasing body temperature until the new ‘set point’ is reached; then the body begins to feel warm.



**Figure A.1** While thermometers can give an accurate reading to the body's temperature, people usually know when they are feverish.

## ANATOMY OF A FEVER

During an infectious disease, fever is how the body treats itself with therapy. How is this accomplished? The infecting organism interacts with the body creating a fever producing chemical called an *endogenous pyrogen*.

This chemical (interleukin-1) is transported through the blood to the hypothalamus and stimulates the production of prostaglandin E<sub>2</sub>, which tells the body to raise its internal thermostat.

The body now sees the normal temperature as too low and generates more heat by **1)** shivering, **2)** vasoconstricting blood vessels to drive blood deeper toward the body's core, which makes the skin cooler which, **3)** creates more “goose flesh”, which **4)** shuts down the mechanism that produces perspiration. It also provokes sleep to preserve energy for internal defense.



**ADDITIONAL SYSTEMIC CHANGES**

The liver produces unique proteins that aid the immune system and increase protection against blood cell damage from toxins. In addition, interleukin-1 also releases an antibody that breaks down muscle tissue to be used as raw material for defense, repair and energy in fighting the invading infection. (*That is why body aches are experienced during fevers — especially in the postural muscles.*)

Interleukin-1 also shuts down digestive processes, which is why a child typically loses their appetite during a fever. Other functions occurring that suppress appetite include:

- Fever above 99.5° F. stops digestion
- Muscle tissue breakdown increases amino acids which depresses the appetite

If food were ingested during a fever above 99.5° F., it would not be digested properly; adding a strain to the system and inhibiting its ability to fight off the infection. So, in reality, the body’s innate appetite suppression is a protective mechanism, which allows full concentration of the body to destroy invading organisms.

White blood cell production and its release into the circulatory system is increased during a fever. This speeds antibody production of interferon by 2000%, providing an inhospitable environment for invading organisms. So, fever is an immune system stimulant.

<b>Organisms Destroyed By Fever</b>	
Infectious Organism	Body Temperature
• Gonococcus	104° F.
• Polio	(reduced by 250x)
• Pneumococcus	106° F.
• Spirochete	106° F.
• Malignant cell tissues	106 – 110° F.

With elevated body temperatures, iron and zinc levels in the blood are reduced, which inhibits bacterial growth. At specific temperatures certain diseases are killed off (*see chart to the right*). At temperatures greater than 110° F. normal cells die. Febrile related seizures are usually the result of electrolyte imbalance due to dehydration from vomiting, diarrhea, and increased perspiration rather than excessive fever over prolonged periods. However, in the case of

these seizures, it is always safe to consult a physician as soon as possible.

## TREATING FEVERS

So, under normal circumstances, a fever is nothing to fear. It is an ally, assisting in the self-healing process. Most of the harm and danger occurs with high fevers. This is usually from **1) dehydration, 2) electrolyte imbalance, or 3) the cause of the fever; not the fever itself.**

*(Research indicates that brain damage from fever due to infection has only occurred in cases of meningitis or encephalitis, and these diseases may cause brain damage aside from the fever they cause.)*

If a fever is managed properly, it will not elevate to dangerous levels. In fact, they rarely go above 104° F. in adults and 105° F. in children, if properly managed. The best

rule of thumb is to *fast* the patient whose fever goes above 99.5° F., otherwise eating interferes with the body's attempts to destroy the disease and runs the risk of driving the fever higher.

Because aspirin can upset the stomach, and in some cases of flu or chicken pox in children cause Reye's Syndrome, it is not the treatment of choice. Various hydrotherapy treatments cost little or nothing and can be quite effective in reducing high fevers.

## WATER TREATMENTS

If the body fights disease by creating fever (*a thermotherapeutic measure*) and hydrotherapy is essentially thermotherapy, then the body's febrile defense mechanism can be assisted by hydrotherapy practices. The optimum body temperature for fighting disease is approximately 102 – 103° F. So, hydrotherapy can be used to bring down dangerously high fevers, and to elevate low-grade fevers. It also is used to enhance the immune system's response to disease and increase blood

circulation. But, always *rest & fast* the patient above all else; keeping them hydrated and watching their electrolyte levels if diarrhea or vomiting is present.

[**NOTE:** *If perspiration is present during a*

*high fever, do not attempt to lower the fever with external water applications. Sweating is the body's way of lowering its temperature. It must not be interfered with. But, if perspiration is absent during high fever, hydrotherapeutic measures are indicated.]*

Temperature Categories	
Description	Body Temperature
• Body Norm	98.6° F.
• Disease fighting optimum	102 – 103° F.
• Dehydration concern	104 – 107° F.
• Dangerous	107° F.

## High Fevers

**1. Tepid Affusion:** The tepid affusion is also called a "luke warm running bath". This treatment works by increasing heat elimination via constantly running water over the surface of the skin; without disturbing the heat production mechanism of the body.

### Treatment

- Seat patient in a bathtub of tepid water (80 – 92° F.)
- Pour water over the back, neck and shoulders
- Check fever on a regular basis
- Stop treatment at approximately 103° F.  
(temperature will continue to coast down to 102° F.)

**2. Tepid Sponge Bath:** As with the tepid affusion, the tepid sponge bath



increases heat elimination via conduction and evaporation. The sponging provides gentle friction, which enhances circulation and heat loss. It is especially suited for children.

### Treatment

- Seat patient in a bathtub of tepid water (80 – 92° F.)
- Gently sponge water over the back, neck and shoulders
- Check fever on a regular basis
- Stop treatment at approximately 103° F.  
(temperature will continue to coast down to 102° F.)

**Figure A.2** The tepid sponge bath is gentle and effective for reducing fevers in infants and children.

**3. Tepid or Neutral Bath:** The temperature for the neutral bath is the same as the other two tepid baths. The main difference is that there is no water being poured or sponged over the body. Instead, the patient is fully immersed except for the head in luke warm water. This treatment is not as effective as the sponge or affusion baths because the physical act of moving water and evaporation do not take place as the patient is motionless and fully immersed. However, because elevated body temperature is more apt to

change, the cooler water temperature has the effect of bringing the fever down merely by conduction transference.

#### **Treatment**

- Immerse patient in a bathtub of tepid water (80 – 92° F.)
- Patient lays motionless
- Check fever on a regular basis
- Stop treatment at approximately 103° F.  
(temperature will continue to coast down to 102° F.)

**4. Graduated Bath:** This treatment is suited to people who have little tolerance for cooler temperatures or that chill or shiver easily. In the graduated bath, begin the water temperature in the bathtub 4° below that of the patient (example: fever at 105° F., water temperature should be at 101° F.). Then, as the patient becomes accustomed to the water temperature, cooler water is added gradually to change temperature 1° every 3 minutes until either the fever is down to 103° F., or until the water temperature reaches 86° F., or the patient becomes chilled. Gentle friction is also acceptable.

#### **Treatment**

- Immerse patient in a tub of water 4° cooler than their body temperature
- Gradually lower the water 1° F. every 3 minutes until:
  - The patient becomes chilled
  - The water temperature reaches 86° F.
  - The patient's fever lowers to 103° F.  
(fever will continue to coast down to 102° F.)

**5. Cold Friction Bath:** The cold friction bath, sometimes called a "*Brand*" bath [developed by an army doctor to treat typhoid fever], is an extreme treatment for extreme cases — possibly when the patient's fever is reaching critically high levels or when delirium, lassitude, or shallow breathing is present. It should not be confused with a *bran* bath that uses an additive for dermatological problems. Cold water normally drives blood toward



**Figure A.3** The scrubbing action of Cold Friction with a mitten or wash cloth brings blood to the surface where the cold water lowers body temperature. This is used for extreme cases of critically high fever.

the interior of the body. However, the friction forces the pores to remain open where the blood can be cooled quicker than the other before mentioned baths. The cold friction bath decreases body heat production while heat elimination is increased.

#### **Treatment**

- Immerse patient in a bathtub of tepid water (70 – 80° F.)
- Apply friction with a towel, mitt, or sponge over the body except the abdomen
- Check fever on a regular basis
- Stop treatment at approximately 103° F. (temperature will continue to coast down to 102° F.), or when patient begins to shiver or become chilled.

*[NOTE: It is imperative that the patient not become chilled or start to shiver. The physical mechanism of shivering will drive up the fever. It is the body's way of maintaining and generating heat in extremely cold conditions.]*



**Figure A.4** The main differences between a Cold Wet Sheet and the Hot Evaporative Sheet is: The Hot Evaporative Sheet is the sheet starts off hot and friction is applied to bring blood to the surface as the sheet cools down.

**6. Hot Evaporative Sheet:** The hot evaporative sheet is a treatment that is effective in that it uses friction, evaporative cooling, and a graduated temperature decrease to bring down fevers. It involves a very hot wet bedsheet wrung out thoroughly. The sheet is placed on the patient. As the water evaporates off the sheet the temperature of it cools down. Then friction rubs through the sheet force the blood near the surface of the skin where it is cooled by the sheet.

#### **Treatment**

- Wrap patient in very hot damp flannel sheet
- As the sheet cools, apply friction over entire body
- Check fever on a regular basis
- Stop treatment at approximately 103° F. (temperature will continue to coast down to 102° F.), or when patient begins to shiver or become chilled.

### Low Grade Fevers

In the case of low grade fevers, the body temperature does not reach optimum degrees to assist the natural immune system to heal itself efficiently (*optimum temperature for maximum internal healing effects is between 102 – 103° F.*).

The solution is to use hydrotherapy to raise a low grade fever to more productive levels without causing any ill side effects. Below is a sample treatment to raise body temperature.

**Hot Ginger Bath:** The hot ginger bath is designed to raise low grade fevers to productive levels to stimulate the immune system to do its job.

#### Treatment

- Grate fresh ginger root, place it in an old clean sock or loose cheese cloth, and place the sock into a hot to very hot bath (100 – 110° F.)
- Have patient drink hot ginger tea as they soak in tub to encourage perspiration
- After 15-30 minutes soaking, have patient not dry off, and immediately put on sweat pants and sweatshirt and get in bed for rest. Change sweaty clothing periodically.



**Figure A.5** A hot to very hot bath can effectively raise a low grade fever to a more productive temperature. Fresh ginger root enhances diaphoresis during the bath.

### **Review Questions — Addendum A**

1. Fever is due to a change in the thermo-regulatory set point of the body? *False.*
2. Another term for fever is pyuria. *False.*
3. Generally speaking, the body feels cold despite increasing body temperature until the new set point is reached? *True.*
4. The chemical interleukin-1 is transported through the blood to the hippocampus, which tells the body to raise its internal thermostat; thus creating a fever. *False.*
5. Interleukin-1 also shuts down the digestive process, which is why a child typically loses their appetite during a fever? *True.*
6. During a fever, white blood cell production is reduced until body temperature returns to normal. *False.*
7. The optimum body temperature for fighting disease is:  
a) 100-101° F.; b) 102-103° F.; c) 104-106° F.; or d) 99-101° F.
8. A tepid sponge bath is ineffective at reducing fever because the water is at the body's current temperature. *False.*
9. A cold friction bath is used only during extremely high fevers. *True.*
10. What herb is placed a hot bath to treat low grade fevers? *Fresh grated ginger root.*

**A**lternating hot and cold applications are said to be one of the most potent and effective hydrotherapeutic treatments. Alone, each treatment has its uses. However, combined they are stronger and more intense in the healing process. The general effects of contrasting hot and cold applications include:

- ALONE
  - Heat is sedative and vasodilating
  - Cold is stimulative and vasoconstricting
- TOGETHER
  - Increased blood & lymph circulation
  - Increased removal of toxins & metabolic waste
  - Increased nutrients to site locations
  - Increased metabolism
  - Increased red and white blood cell production
  - Increased immune system response
  - Increased healing ability



**Figure B.1** Contrast applications, such as this hot tub with cold water splash, increases circulation, removal of toxins, boost immune system response and metabolism.

### INHERENT DANGERS OF PROLONGED EXPOSURE

The problem in prolonged treatments of one temperature range is that a short treatment that was once stimulating becomes depressive to the body over time. Short cold vasoconstricts the blood vessels, then vasodilates and stimulates the body systems. But, over time is depressive — it slows all bodily functions.

Short hot applications vasodilate blood vessels and are stimulating, but over time have a sedative effect on the body. The real danger lies in prolonged hot applications. They can depress circulation while stimulating metabolic activity. Normally increased metabolic activity requires increased blood circulation to support its needs; carrying necessary nutrient chemicals to the cells for proper functioning while removing toxins and the waste products of metabolic activity. When blood circulation is depressed and metabolism is increased, metabolic waste and lack of oxygen build up in the blood and cannot be filtered through the kidneys fast enough. As a result, the body becomes highly toxic and can make someone sick. This negative response to the body can be as little as a mild



Circulatory vs Metabolic Effects of Hot & Cold Water		
Application Type	Circulatory Effect	Metabolic Effect
• Short Hot	Stimulating	Stimulating
• Long Hot	<u>DEPRESSING</u>	Stimulating
• Short Cold	Stimulating	Stimulating
• Long Cold	Depressing	Depressing

headache all the way to the flu symptoms of fever, dizziness, vomiting, as well as body aches and pains. During pregnancy, it is paramount to the health of the developing fetus for the mother to stay away from extremely hot baths and very hot tubs or whirlpools.

That is why it is important to **1)** never use prolonged hot applications — those over 5 minutes — without proper monitoring of the patient and **2)** always follow a hot application with a cold one. Of course, much depends on the health and stamina of the patient.

#### HEALTHFUL ASPECTS

Any repeated contrast applications of hot and cold water will alternately sedate and stimulate the body. Whether used as a foot bath, foot and leg bath, hand bath, pelvic, or total immersion bath, there is a profound effect on the total body. Even partial baths act similarly because nerves and reflex points connected to other areas and organs are found in the hands and feet.

These repeated treatments create new circulation patterns, which break down chronic congestion in the organs. This congestion, not unlike nasal or bronchial congestion, occurs when blood cir-



ulation to specific areas of the body becomes ineffective because of chronic tension, stress, illness, or injury. Without the proper amount of nutrients or removal of toxins in the body, these organs and tissue cells decrease in function and create dis-ease. By increasing the circulation to these remote areas, better health is achieved.

*During pregnancy,  
it is paramount  
to the  
health of the  
developing fetus  
for the mother  
to stay away from  
extremely hot baths  
and very hot  
hot tubs or whirlpools.*

## TREATMENT TYPES

There are several different types of contrast applications, from partial to full body immersions. These include:

- Contrast Foot Baths
- Contrast Hand Baths
- Contrast Head Applications
- Contrast Chest Applications
- Contrast Immersion Baths

### Contrast Foot Baths

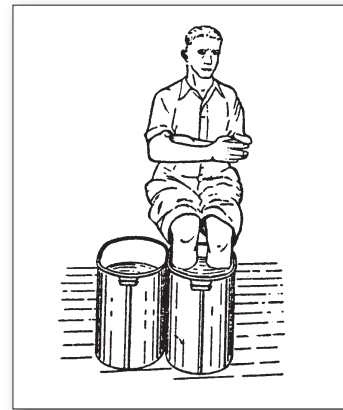
Because the feet are both local and reflexive in nature — that is, applications can treat local problems as well as distant areas — the contrast foot bath is a very important part of hydrotherapy. Treatment can be for anything from sprained ankles to congestive headaches.

#### Treatment

- Place feet in tub or bowl of hot water (100–110° F.)
- Time elapse should be 3 to 5 minutes
- Place feet in contrast bath of cold water (40–55° F.)
- Time elapse in cold water should be < 1 minute
- Repeat hot/cold sequence several times
- Always end in cold and dry feet immediately

The effects of the repeated contrasting temperatures to the feet include repeated vasodilation and constriction, rushing blood to the surface and driving it deep toward the core. Locally, it is good for cold feet, foot infections, swollen feet or ankles, and chilblains. Reflexively, it is good for toothaches, neuralgia, congestive headaches, and congestion of the pelvis or abdomen.

**[NOTE:** *The more often the contrast application is repeated, the less effective the treatment becomes. After 6 to 8 treatments, the point of diminished returns is reached, which takes away the treatment's effectiveness.*]



**Figure B.2** Contrasting foot baths are a very important part of hydrotherapy because they affect the feet, but other body areas, reflexively speaking.



**Figure B.3** A cold running affusion of water may be used in lieu of a still bowl of cold water for a more intensive cold treatment.

### Contrast Hand Baths

Hands, like feet are important because treatment can be both local or reflexive. Conditions treated locally include: sprained wrists, carpal tunnel syndrome, stiff arthritic joints (non-rheumatoid), and cold hands and arms. Reflexive treatments include: nosebleeds, asthma, headaches, and lung congestion.

### Treatment

- Place hands in bowl of hot water (100 – 110° F.)
- Time elapse should be 3 to 5 minutes
- Place hands in bowl of cold water (40 – 55° F.), or a running affusion of water may be used instead of a bowl [ice cubes may be added for more intense contrast]
- Time elapse in cold water should be < 1 minute
- Repeat hot/cold sequence several times
- Always end in cold and dry hands immediately



**Figure B.4** Caution should be used when applying cold running affusion of water to the head for migraine pain as vasoconstriction at the scalp can force blood to deep vessels, which could exacerbate the pain.

### Contrast Head Applications

Contrast applications to the head are used to relieve congestive headaches from the common cold/allergies, or nervous and muscular tension due to stress. The treatment is repeated heat and cold, which improves cerebral circulation via vasostimulation.

**[Note:** *Caution should be used when using cold water treatments locally or reflexively in cases of migraine headaches, because of the pain mechanism. Migraine pain is caused as blood vessels vasodilate in the head, which causes nerves wrapped around those vessels to stretch and register as pain (one of the reasons patients feel a pulsing pain during migraine episodes). Any hydrotherapy treatment that might*

cause vasodilation of blood vessels in the head could exacerbate the pulsing headache pain associated with migraines or severe head pain. This includes cold water affusions to the scalp, which forces blood to vessels within.]

### Treatment

- Place hot fomentation or shower to the head
- Time elapse should be 3 to 5 minutes
- Place cold compress, ice pack, gel pack, or a affusion to the head *as illustrated to the right*
- Time elapse with cold water < 1 minute
- Repeat hot/cold sequence several times
- Always end with cold and dry head immediately  
[Effects can be enhanced by placing feet in hot water as it draws blood away from the head]



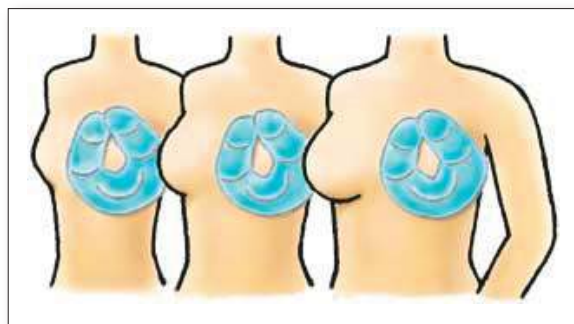
**Figure B.5** Cold water affusions are a fun and playful way to remain healthy while hot tubbing.

### Contrast Chest Applications

Contrast applications to the chest are used to stimulate respiration, to prevent circulatory stasis following anesthesia in surgery, break up bronchial congestion due to common cold, lactation difficulties, tender or painful breasts, and simple muscular tension.

### Treatment

- Place hot fomentation, heating pad, water bottle or gel pack on the chest
- Time elapse should be 3 to 5 minutes
- Place cold compress, water bottle, ice pack, or gel pack on chest
- Time elapse with cold water < 1 minute
- Repeat hot/cold sequence several times
- Always end with cold and dry chest immediately



**Figure B.6** Breast gel packs can be used cold to reduce inflammation and discomfort of swollen breasts, or warm for lactation difficulties.

Thermalform® Breast Gel Pack illustrated.  
<http://www.thermalform.com/howtouse.html>



**Figure B.7** Geothermal springs may have hot and cold baths in close proximity. If not, commercial hot springs may offer cold plunge close by their hot pools.

### **Contrast Immersion Baths**

Contrast immersion baths are difficult to administer for home use. Two baths or pools are needed. Usually, any gymnasium or health club will have a hot whirlpool bath and cold plunge pool. Geothermal springs may have hot and cold baths in close proximity. Commercial hot springs may also offer cold plunge close by. If in the outdoors during winter snow events, one can either roll in the snow as the cold treatment or gather snow to massage the skin.

### **Treatment**

- Immerse patient in hot bath (100 – 110° F.)
- Time elapse should be 3 to 5 minutes
- Immerse patient in cold plunge pool (40 – 55° F.)
- Time elapse with cold water — < 1 minute
- Repeat hot/cold sequence several times
- Always end with cold and dry off immediately



**Figure B.8** Cold plunges are not for the weak — those that suffer from heart irregularities or extremely high or low blood pressure, as it can be a shock to the system.

When the patient is being fully immersed in contrasting baths, make certain that they do not suffer from heart irregularities, extremely high or low blood pressure, weak disposition, elderly, etc. This treatment can be shocking to the system that is not prepared for it. Watch patient very carefully during treatment, being sure to monitor pulse rate.

### **Review Questions — Addendum B**

1. Contrast applications are one of the most & effective hydrotherapeutic treatments. *True.*
2. Name 4 major effects of contrast applications. *Increased blood & lymph circulation; increased removal of toxins and metabolic waste; increased metabolism; and strengthened immune system.*
3. Explain the danger in prolonged systemic hot applications. *When circulation is depressed and metabolism is increased, metabolic waste and the lack of oxygen build up in the blood and cannot be filtered through the kidneys fast enough. As a result, the body becomes highly toxic and can make someone sick.*
4. Why are prolonged hot baths detrimental during pregnancy? *They can damage the fetus.*
5. Contrast applications create new patterns of circulation, which break down what? *Chronic congestion in the organs.*
6. How many contrast applications are most effective? *No more than 4 to 5 treatments.*
7. Which form of arthritis is not helped by contrast applications? *Rheumatoid arthritis.*
8. Do cold water applications to the head help relieve migraine headache pain? *No.*
9. Warm water applications to the breasts help what condition? *Lactation difficulties.*
10. People with what conditions should avoid cold water plunges? *Those with heart irregularities, or extreme high or low blood pressure.*

# The “SPA” Experience

**T**he “SPA” experience is taking over the country. In the decade between 1990 & 2000, the amount of spas in the United States went from approximately 300 to over 6,000.

And, in 2005 a poll showed over 12,000 spas in the US... all this during difficult economic times in the country. This does not indicate a fad, but a resurgence in popularity with more natural methods of healing in America, as people become dissatisfied with the modern medical community. They are willing to pay out of pocket expenses

for treatments that work, even in the face of the insurance companies’ refusal to acknowledge the time-honored evidence of these treatments and refusal to embrace and offer these services under their health plans as is the case in most European countries. So, the ripple in the pond that began with the Greeks and Romans thousands of years ago continues to grow and gain momentum.

## THE ORIGINS

The word SPA comes from an acronym of the latin phrase “*Salus Per Aquam*” — translated as “*Health By Water*”. Some scholars believe that spa treatments originally came from the Temple of Apollo on the island of Delphi, which may have originated in Solomon’s Temple in Israel before that. The person went through a series of sweating, scrubbing, bathing, and anointing oils for purification prior



**Figure 14.1** Aquae Solis, the Roman Baths in England.

*A 2005 poll shows more than 12,000 spas in the United States.*



**Figure 14.2** The Temple of Apollo on the Isle of Delphi.

to seeking guidance or revelation from the oracle of Delphi — *a blind woman with the power to see into the future*. These washings and anointings were a ritual of spiritual origin to cleanse and purify the individual before being presented to this ancient prophetess & seer of past and future events. The mineral pools at the Temple

Complex were said to have magical powers. And, people who went through this series of treatments noticed physical benefit to their bodies too.

The Romans assimilated what they liked from the cultures they conquered, and in the case of Greece, these ritual sweatings, scrubbing, bathings, and massaging with scented oils were used for their healthful purposes even though the spiritual aspect of the treatments became lost in the Latin translation... *so to speak*.

### **SPA TREATMENTS OF TODAY**

Let's take the same path that ancient peoples took through the Temple on Delphi via the treatments offered back then and those offered now.

#### **Sweating/Purification Treatments**

In ancient cultures, geothermal springs were used to bathe in and, if the water was hot, to sweat or detoxify their bodies. The Romans built underground furnaces to heat the water in their *thermae* (large bath houses). Some rooms were filled with steam that was breathed through the nostrils or lungs which gave added health benefit to the users. There were also rooms of minimal steam and even more intense heat, like the sauna.



So, at our modern day spa, we can enjoy **Aromatherapy Steam Baths** complete with cold hoses to refresh ourselves. The **Sauna** gives off more heat and less moisture which helps the skin in more humid environments, with added aromatic oils like eucalyptus dripped on the rocks. *See Chapters 6 & 7.*

Other sweating or purification treatments include the heat retaining properties of a **Mud Bath** which can draw impurities from the body. Also being buried to the neck in a **Heated Sand Bath** treatment, called *sunayu* in Japan, is excellent for painful or stiff joints associated with rheumatism, arthritis, and old age. Still other sweating/detoxing/purification treatments are wraps. Found in *Chapter 10*, these include the:

- **Cold Wet Sheet** treatment (sometimes called the **Multi-stage Heating Wrap**), which takes the user through ever changing stages of temperature increase that can help a myriad of maladies
- **Hot Moist Body Wrap** which induces the sweat sooner in a cocoon of blankets
- **Herbal Body Wrap** which is identical to the hot moist wrap, but with combinations of herbs or essential oils to intensify the session while it treats many conditions
- **Mineral Mud Body Wrap** that uses fine clay called Bentonite hydrated with mineral water for its health effects depending upon the concentration of minerals in the water
- **Seaweed Body Wrap** uses powdered seaweed that is reconstituted with either mineral water or seawater for their healing purposes
- **Marine Mud Wrap** combines the drawing properties of bentonite and the thalassotherapy of seaweed/seawater rich in minerals, trace elements, proteins, and vitamins



**Figure 14.3** Note the many layers of blankets to retain heat that is common to all the body wraps.

*All body wraps are detoxifying in nature because of the perspiration they create.*

• **Dry Sweat Body Wrap** is like all the other body wraps in regards to the layering, however it is not moist, but dry and usually preceded by a steam/sauna to intensify the sweat.

In addition to mud body wraps, some spas will offer body wraps that combine mud with volcanic ash for its pH balancing capabilities, and/or peat moss which is high in phyto-chemicals, antioxidants, and immuno-stimulants.

### Scrubbing/Friction Treatments



**Figure 14.4** A mitten treatment uses mitts or gloves made of sissel, flax or loofah fibers.

Today we may use the term “body polish”, but the intent and effect are the same — scrubbing soil and dead skin to expose and then nourish the pure new skin beneath via increased circulation. Whether you use the Roman *stiggle* (today we have brushes with short curved handles to scrape dirt and sweat off the skin), or use horsehair mittens of the Turkish hammams, or flax-woven gloves and sea salt used in the Danish salt glow treatment, or even the birch branches to beat the skin — so popular in Russian *banyas* or the Finnish *sauna* — frictions on some level are all the same.

You may use the refined and gentle **Sponge Bath**, with soaps and scented bath additives for an aromatherapy affect to relieve stress, alleviate aches & pains, or pamper the skin. You could try a **Wet** or **Dry Brush Bath** that is only slightly more aggressive than the sponge and still gentler than a salt glow. It is noted to stimulate the lymphatic system which strengthens immunity from disease. Or you could offer the **Salt Glow** or **Salt Scrub** treatment, which is highly stimulating when flax mittens are used, or even a **Loofah Gourd** to scrub & exfoliate. All of these treatments are described in Chapter 8.

An alternate to traditional Danish salt glows in spas with wet rooms is a mixture of sea salt or sugar, natural oil, and sometimes corn meal, ground nutshells, rice, or fine grained sand from exotic coastal areas which are rubbed into the skin by hand, and then hosed off the body using a Scotch hose or Blitz Guß (pronounced *guss*). Spas are also

using microderm abrasion treatments to gently exfoliate the face and/or delicate tissues.

### **Bathing/Cleansing Treatments**

Balneotherapy is bathing for healthful/therapeutic purposes. Bathing nowadays can precede, follow or even mix with friction treatments especially because the soaking assists the exfoliation of dead skin cells, but rarely precedes the detox or sweat treatments as these treatments always leave one soiled. After detox treatments,



it is best to follow with a bath to cleanse the body and close the skin pores, whether it is a soak in water, a bath with additives to enhance the cleansing process, or baths that treat specific regions of the body or even baths that use the pummeling/massaging action of jets to relax sore muscles.

**Onsen** is the Japanese term for soaking in natural geothermal springs. These types of baths not only relax sore muscles, but have the added benefit of soothing the spirit by being able to enjoy natural surroundings, as well as the absorption of healthful minerals found in the water.

**Mineral Baths** — whether naturally occurring at destination spas or added to the tub at resort/hotel/day spas — the result to the client is the same: relaxing to body, mind, and spirit; warming to detoxifying depending upon the temperature; and the medicinal effect of the minerals to the body. *See Chapter 9.*

**Baths Additives** are where bathing is usually in heated tap water with some added powder or liquid that has a medicinal or healthful benefit. It can be as little as a tub tea or several drops of essential oils.

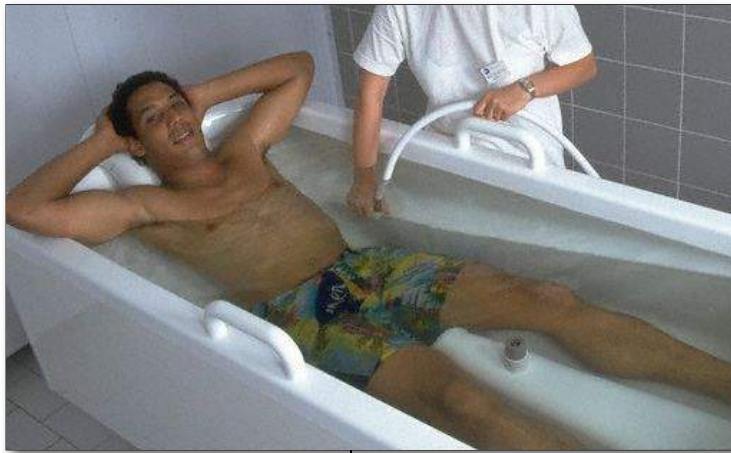
**Figure 14.5** A Japanese natural geothermal spring, called Onsen.

Onsen differ from Ryokan as the latter are commercial either public or private bathing establishments.

These differ from mineral baths in that they usually do not contain just minerals, but other ingredients. *See Chapter 6 for this and the next several bath descriptions.*

**Whirlpool** describes the action created by combining water and pressurized air forced through jets in a stationary bath. Over the centuries, people have known and enjoyed the healing force in natural swirling waters which relax the body with a massaging action. When combined with warm to hot water, the whirlpool bath relieves muscular aches and pain also.

**Hydromassage** is a treatment found in health spas throughout



**Figure 14.6** A hydromassage is where the spa therapist or practitioner manipulates the direction and force of the jet/hose to massage various areas of the patient.

Europe and now in high end spas in North America. It involves a stationary deep capacity tub filled with warm to hot water. But, instead of air going through jets that are built into the sides of the tub, a spa therapist holds a high pressured nozzle that is directed to various areas of the body for its massaging action — *as illustrated on the left.*

**The Paraffin Bath** was originally developed to relieve aches & pains of arthritic joints (*hands & feet*), and eventually became popular with nail salons and estheticians (*skin care specialists*) to warm up hands and feet and lock moisture in as part of other treatment packages. And, because skin care has become an integral portion of the spa experience, paraffin baths have found their place in spa offerings. The paraffin bath is a small crockpot-sized tub that gently warms wax to a liquefied state. The hands or feet are then immersed repeatedly to deep heat tissue and joints. Following the treatment, the wax is carefully peeled off and discarded.

**Footbaths** are a standard spa treatment which are combined with pedicure and/or reflexology packages. It is always important to

cleanse the feet prior to the practitioner working on them to cut down on instances of spreading contagions. It is also important to properly sanitize the footbath and any tools used in foot care treatments. Commercially available disinfectants work, as can diluted bleach solutions, antibacterial cleansers, etc. See chapter 5.

In addition to medicated bath additives that are available commercially in premixed packs or bottles, there is a virtual in-exhaustible supply/combination of **herbs & aromatic essentials** and scents that can be added during bath time for any array of desired health effects, see the end of Chapter 6 as well as Addendum C.

This is one of the unique areas where especially destination/resort spas can shine by creating herbal blends/ mixes geared specifically around the resort location or theme — from scented *tropical flower essences* for the isles of polynesia, all the way to *chocolate baths and facials* in the spa at the historic Hershey Hotel in Hershey Pennsylvania.

The **Vichy Shower**, named after the spa town of Vichy, France where it originated, involves a series of shower heads mounted horizontally over a wet table. The Vichy shower's purpose was to cleanse/rinse off patients who had limited mobility issues including para- and quadraplegics. This type of arrangement of multiple shower heads eventually manifest in a vertical shower head placement for mobility-impaired spa patrons called the Swiss Shower (an excellent example is at the Fordyce bath house museum in Hot Springs, Arkansas as well as photo to the right).

For cleansing after friction treatments like salt glows or sugar scrubs, occasionally a **Scotch Hose** or **Blitz Guß** is used.



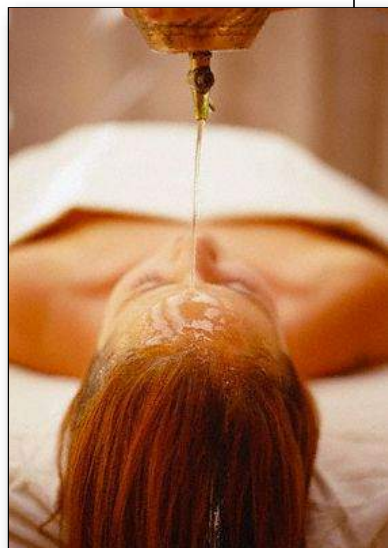
**Figure 14.** A Vichy shower allows the patient to remain in a reclined position.



**Figure 14.8** A Vertical Vichy shower, also called the Swiss shower, is for standing patient where rinsing off quickly is essential.



**Figure 14.9** Scotch hose spraying cold water to rinse off the body.



**Figure 14.10** An ayurvedic shirodhara warm oil scalp treatment.

The Scotch hose is actually two high pressure hoses; one hot while the other is cold. The attendant alternately sprays the client with hot and cold water. In addition to the cleansing effect provided as the high pressure blows off bits of clinging debris, the alternating temperature of the hoses forces the muscles to contract and relax repeatedly. The *Blitz Guß*, or *lightning bath*, utilizes only the high pressurized cold hose which forces the muscles to contract continually, which is more aggressive/stimulating.

### **Anointing With Oils**

From the ancient Indian ayurvedic *Shirodhara* scalp treatment (illustrated on the lower left), to being massaged with finely scented oils, lotions & creams — after all the sweating, scrubbing, and bathing rituals are over — anointing the body to lock in moisture as well

as nourish/ feed the skin with oils high in concentrations of antioxidants & Retin A in addition to other healthy elements, is the last of our spa experiences that mirror the ancient rites practiced at Apollo's Temple on Delphi. In many ancient cultures kings were anointed with holy oil by high priests, similar anointings took place in old testament temples, and even the sick are anointed with oils.

Although olive oil was the major lubricant of the ancient world, today we have available an enormous quantity of exotic oils from all over the planet at relatively inexpensive prices. There is kakui nut from Hawaii, all sorts of nut oils like almond, peanut, walnut, macadamia nut, sunflower (extracted from sunflower seeds which are nuts), jojoba (which is a liquid wax/resin that is extremely healthy for the skin), fruit oils like coconut oil, and nonedible seeds like grape-seed or sesame oils, etc. There is also mineral oil, which is available in two different grades; *heavy* is an intestinal lubricant for constipation that is not to be used on the skin because it clogs the pores causing eruptions, while *light* grade is what cosmetic manufacturers use for the

skin because it's smaller molecular size doesn't clog pores. Although very few massages are given with petroleum products.

To enhance the effects of the massage, using aromatic herbs and essences — **Aromatherapy** — during the sessions can create the desired effect. Using essential oils for **sore muscles** like, juniper, rosemary, black pepper, mint, menthol, etc.; **poor circulation** like ginger, sage, cinnamon, cypress; **stress reduction** like lavender, chamomile, marjoram, cedarwood and ylang ylang; or any other numerous combinations — see *Addendum C*.

## MASSAGE & BODYWORK

### Western Bodywork

These modalities, for the most part, include **Swedish Massage**, with fluid movements and kneading to relax body & mind; **Sports Massage**, which is more aggressive, working out tight knots; **Deep Tissue** bodywork that is a genericized version of **Structural Integration**, the life's work of Ida Rolf, commonly called **Rolfing** that performs a ten session protocol to lengthen chronically tight muscles and fascia;

**Hellerwork** is similar to Rolfing with dialog to work through deep-seated body restrictions; **Reflexology**, working points/areas on the hands & feet to effect health responses elsewhere in the body; **Zone Therapy** similar to reflexology on the whole body; **Myofascial Release** which stretches and manipulates tight fascia to promote greater range-of-motion; **Trigger Point Therapy**, sometimes called **Myotherapy**, that works to release tight painful knots in specific muscles at specific sites; **Neuromuscular Therapy** is considered a blend of trigger point therapy and myofascial release techniques; **PreNatal Massage** works on expectant mothers and their unique needs and precautions; **Lymphatic Massage**, sometimes called **Manual Lymph Drainage** or **MLD**, that stimulates the flow of lymph



**Figure 14.11** Swedish Massage works to relax body & mind while it moves fluids easing strain on the heart.

fluid to reduce some types of edema while it strengthens the immune system. Some of these on this and the following pages are covered in basic core or advanced curricula of many vocational massage programs, and a few are copyrighted or registered brands not to be used unless the practitioner is properly certified in that specific technique.

### Asian Bodywork



**Figure 14.12** Thai Yoga massage incorporates deep pressure, powerful stretches, pulls, and twists. Some consider it a sports shiatsu variation.

These methods include *Japanese Shiatsu*, sometimes called *Anma*, which involves pressure & strokes to acupoints to balance chi in the body which promotes self healing; *Thai Yoga Massage* considered by some the sports massage of Shiatsu because it incorporates powerful stretches, pulls, and twists to create freer movement in the

body; *Ashiatsu* which is Japanese Shiatsu using feet while being suspended by bars hung from the ceiling; *Jin Shin Do*<sup>®</sup> or *Jin Shin Jitsu*, similar types of oriental acupressure holds to specific points to balance energy to paired meridians and strange flows; *oriental acupressure* which works specific points to combat ill-health effects such as back pain, asthma, headaches, etc.; and *Tui Na*, the official massotherapy of China that is very specific in its numerous strokes and indications. Of course, bodywork from India to polynesia have been included also, such as *Ayurvedic Massage* geared to different body/energy types; and *Lomi Lomi* which is the traditional massage native to Hawaii.

### Postural & Movement Therapies

These include such well known methodologies as *Alexander Technique* which works with posture, balance, and coordination to counter the effects of ill health; *Feldenkrais Method* or *Awareness through Movement* that creates freer, more efficient movement; *Trager Work*, considered the antithesis of Roling by using gentle



rocking, cradling, and moving to free restrictions in the body; **Rosen Method** which involves gentle touch and verbal communication to evoke relaxation and self awareness; and **Applied Kinesiology**, sometimes called **Touch for Health**, using muscle testing and massage/acupressure and other techniques to strengthen muscle groups and promote general health and well-being.

### **Aquatic Bodywork**

There are various modalities that blend massage and water flotation like **Watsu**<sup>®</sup> developed by Harold Dull at a clothing-optional resort called Harbin Hot Springs in California which is a combination of flotation, gentle body movement and stretches in a zen-like meditative state. The name watsu comes from **WA**ter



shia**TSU**, but when analyzed has very little direct correlation to Japanese shiatsu. Some people consider watsu sensual in nature though, because of the contact intimacy between practitioner and client. Other aquatic bodywork forms include: **Wassertanzen** or Wa Ta for short, from Germany, which blends watsu technique with taking the client beneath the water on occasion to incorporate massage elements of Aikido, dolphin & snake motions, and dance/calisthenics; **Hydroholistics**, a combination of watsu and alexander technique; **Jahara**, developed again by someone in California that utilizes flotation, support, gentle bodywork to release spinal restrictions and breath work; and lastly **Aqua Wellness**, which combines stretches, deep tissue bodywork and joint release work. Even **Craniosacral Therapy** can be done effectively in the water with exceptional results.

**Figure 14.13** Watsu combines flotation, gentle body movement and stretches in zen-like meditative dance.

*Watsu is supposed to be a water-based shiatsu; however, it has very little direct correlation to Japanese Shiatsu.*



**Figure 14.14** Reiki is an ancient Tibetan healing system popularized in Japan. It might be noted here there is nothing 'sensual' about Reiki because it is done with the client full clothed with hands either hovering over the body or using the slightest touch.

### **Energy-based Work**

Energy work includes: **Reiki** is an ancient Tibetan healing system that uses light hand placement to channel universal healing energies to the recipient; **Therapeutic Touch** developed by a nurse, Dolores Krieger that uses hands to sense energy blockages in the body and direct those energies to promote healthy states; **Craniosacral Therapy** uses gentle cranial and

sacral holds to alleviate restrictions in the cranial vault thereby allowing the free flow of cerebrospinal fluid promoting health; **Polarity Therapy** uses gentle touch to balance bioelectric fields to promote relaxation and better health; **Spinal Touch** is a blend of polarity and acupuncture centered around the spine to alleviate energy blockages; and **Zero Balancing** uses ischemic pressure to points to align body structure and energy.

### **Stone Therapy**

Stone work integrates bodywork or energy work or both with stones/crystals. These include: **Oriental Hot Rock Therapy**, sometimes called **Sauna Rock Therapy**, which uses river tumbled medium-sized rocks that are heated dripped with eucalyptus oils, wrapped in towels and placed strategically on the Urinary Bladder meridian to balance energy and regulate the function of every major organ system in the body; **Hot Stone Massage** or **Heated Stone Massage** or **Bones of the Earth**<sup>®</sup>, all of which utilize copious amounts of oil and smaller heated river tumbled black basalt stones (2-4 inches) to massage the body that allows deeper work without the strain of deep tissue massage on the practitioner's hands; **Stone Shiatsu** that uses smooth tumbled rocks of metaphysical healing capabilities, such as malachite, charoite, or labradorite, to gently rub the client's body

through their clothing without heat or oil, but for the energy-related effects; and **Crystal Healing**, sometimes called **Laying on of Stones**, which uses small stones and crystals of different colors corresponding to the chakras laid and aligned to the chakra energy centers to promote relaxation, and energy balance.

## TYPES OF SPAS

There are ten different types or classifications of spas operating around the world each offering a menu of services to their clientele in which approximately 70% of those services rendered are some sort of massage/bodywork, 20% are hydrotherapy-based, 10% is skin care, while the remain 10% of services are a combination of haircare and retail sales items. These types of spas include:

- **City or Day Spas**, which offer most all the menu items of a full-blown resort spa, but with the convenience of being in the urban or suburban area near work and home.
- **Salon Spas** that try to capitalize on the popularity of spa treatments by offering massage, facials and pedicure packages into an existing hair and/or nail salon. However, it is difficult to escape the sound or smell of that environment enough to enjoy oneself.
- **Hotel or Amenity Spas** which, under normal circumstances, expand out from an existing exercise/pool facility into a partial or full service salon or day spa, but are normally cramped for floor space because of the limitations of the exercise room. Although when the hotel plans



**Figure 14.15** Crystal healing layout session to balance the chakras using clear and colored stones and crystals.



**Figure 14.16** Crystal healing layout session to balance the chakras using clear and colored stones and crystals.

properly for a full-sized spa during its construction or renovation, it can provide both beautiful and spacious amenities for all to enjoy within the convenience of a hotel.

- **Cruise Ships**, which offer massages, facials, and pedicures, and even occasionally have more menu items available for either on deck, ensuite, or near their exercise facilities; they are floating hotel/amenity spas.

- **Sports Club Spas** are a magnificent idea because the patrons that frequent the sports club are already health conscious and are at the facility where it is only a stop off to enjoy the services offered, and they have the convenience of being in town.



**Figure 14.17** Patrons enjoying the mineral waters at Crystal Hot Springs in Honeyville, Utah.

- **Mineral Spring Spas**, which are really the closest thing to the original Roman spas, situated around a natural geothermal warm or hot springs where people can enjoy the healthful benefits of the waters.

Most spa towns in Europe are this way or are located by the sea for its benefit as well. Very few of American Spas

are at a natural springs environment (*see Chapter 9*).

- **Medical Spas**, offer medically-oriented services in addition to spa services (*this book has attempted to reinforce the important concept of spa treatments as medically-based*). Larger facilities, like in Europe, are usually built around natural mineral springs, and have doctors and nurses on staff. Sometimes the entire town is built around and offers extends services for spa guests (*see destination spas*). Smaller medical spas, like day spas, are conveniently situated in town close to their patrons. They tend to offer more cosmetic-oriented services such as

dermatology and plastic surgery mostly as outpatient care. Esthetician and microderm abrasion treatments are done under the licensure and supervision of a qualified healthcare practitioner.

- **Multi-therapy Wellness Centers**, are beginning to offer more spa services. These centers are usually in town close to city dwellers and may offer several health-oriented amenities such as chiropractic care, homeopathy/naturopathy, acupuncture, a master herbalist, hypnotherapy/counseling in addition to massage, and hydrotherapy.

- **Rehabilitative Centers/Hospital Spas**, which were quite fashionable a hundred years ago, and are experiencing a resurgence in popularity. It usually centers around physical therapy and sports rehabilitative medicine and possibly a spinal clinic with exercise pools and occupational therapy departments also.

In America, only the medical spas, multi-therapy wellness centers, and rehabilitative center/hospital spas have the blessing of the insurance companies to bill out these medically-oriented spa services. In Europe, physicians still write prescriptions for extended visits to spas for ill health that are picked up by insurances.

- **Resort/Destination Spas**, are the last category. Resorts are where one goes to golf or enjoy vacations, which just happen to have a spa as an amenity. Destinations spas are resorts people visit primarily for the spa regimens as opposed to golf or go to entertainment parks attached to the resort experience. However, this category's line are becoming blurred as top notch or world class resorts are building luxurious super-spas that are, in fact, becoming the main draw of the facilities, like the Four Seasons as the best example of resort turned destination spa.



**Figure 14.18** Vichy shower at the Beverly Hills, California Four Seasons Resort.

Other world-renowned destination spas include:



**Figure 14.19** The main promenade at Mariánské Lázně, Czech Republic.

- Carlsbad (Karlovy Vary), Czech Republic
- Baden Baden, Germany
- Ojo Caliente, New Mexico
- Mariensbad  
(Mariánské Lázně), Czech Republic
- Desert Hot Springs, California
- Evian-Les-Bains, France
- Noboribetsu Onsen, Japan  
(see Chapter 9).

#### **Review Questions — Chapter 14**

1. The acronym SPA for a latin phrase means what? *Health by Water.*
2. Some scholars believe spa treatments originated in what ancient Temple? *Either the Temple of Solomon or Apollo*
3. How were the Romans influential in the spread of hydrotherapy. *Roman soldiers built bathhouses in conquered lands throughout Europe.*
4. Name two sweating treatments. *Steambaths and Saunas.*
5. What is the name for a Japanese geothermal springs? *Onsen.*
6. What is another name for Scotch Hose? *Blitz Guss.*
7. Structural Integration is more commonly called \_\_\_\_\_. *Rolfing.*
8. What form of aquatic bodywork was invented by Harold Dull? *Watsu.*
9. Name four types of stone therapy? *Oriental Hot Rocks, Hot Stone Massage, Stone Shiatsu, and Crystal Healing.*
10. How many different classifications of spas are there? And name them. *Ten in all: Day spas, salons, hotel or amenity spas, health club spas, cruise ships, mineral spring spas, resort/destination spas, wellness centers, medical spas, and rehabilitation/hospital spas.*

# APPENDIX A: HYDROTHERAPY EXAM QUESTION STUDY GUIDE

The following hydrotherapy questions are compiled from past *Europa* publications no longer on the market. Using added questions from each chapter and addendum, this publication offers 295 questions for your review in preparing to take and pass state licensing and/or certification exams. Most licensing/certification exam account for approximately 1% to 3% of the exam contents. Because the hydrotherapy and spa profession is still in a state of growth, it is important to be well read and skilled when entering the work place upon graduation from school.

1. Local application of moist heat is:
  - a. vaso pack
  - b. fomentation (b)
  - c. steam bath
  - d. infusium
2. What is an effect of local cold applications?
  - a. vasodilation
  - b. deep penetration of soft tissues (b)
  - c. migration of white blood cells
  - d. release of endorphins
3. Which is not an effect of heat?
  - a. increased local tissue metabolism
  - b. increased O<sub>2</sub> content in venous blood
  - c. regional analgesia
  - d. decreased O<sub>2</sub> content in venous blood (d)
4. \_\_\_\_\_ is the transfer of heat through a tissue without making contact.
  - a. convection
  - b. conversion (b)
  - c. conduction
  - d. contraction
5. Choose the untrue whirlpool statement:
  - a. a partial emersion bath of agitated water
  - b. physiologic effects chemical & mechanical (b)
  - c. physiologic effects thermal & mechanical
  - d. used to treat burn victims at hospitals
6. Short term cold application:
  - a. stimulates (a)
  - b. sedates
  - c. reduces tension
  - d. has no effect
7. Which treatment can temporarily reduce BP?
  - a. percussive douche to the posterior trunk
  - b. short cold to precordium
  - c. prolonged heat to precordium (c)
  - d. a fomentation to the shoulders
8. General exposure to cold will \_\_\_\_\_.
  - a. increase peristalsis
  - b. increase physiologic function
  - c. decrease physiologic function (c)
  - d. increase chance of diaphoresis
9. What application is used for constipation?
  - a. short term heat
  - b. short term cold
  - c. paraffin bath
  - d. prolonged cold to abdomen (d)
10. Shifting fluid from one part of the body to another using hydrotherapy is:
  - a. contralateral effect
  - b. hydrostatic effect (b)
  - c. venostasis
  - d. homeostasis
11. What phase of a reaction is first to happen?
  - a. thermic (a)
  - b. nervous
  - c. muscular
  - d. circulatory
12. Cold mitten friction:
  - a. increases antibody production
  - b. stimulates circulation and metabolism
  - c. increases white blood cell activity
  - d. all of the above (d)

13. What relieves congestive headaches?  
 a. whirlpool  
 b. hot foot bath  
 c. sitz bath  
 d. all of the above (b)
14. A cabinet in which a client reclines with the head outside the cabinet:  
 a. sitz bath  
 b. Brand bath  
 c. Russian bath  
 d. hydrocollator (c)
15. Which is not an indication for a hot foot bath?  
 a. frost bite  
 b. epistaxis  
 c. inflammation of the feet  
 d. nose bleed (a)
16. A wrung cloth of ice water applied to area is:  
 a. chem pack  
 b. ice pack  
 c. cold compress  
 d. cryotherapy (c)
17. Open lesions and skin diseases are contra-indicated for:  
 a. paraffin bath  
 b. salt glow rubdown  
 c. cold mitten friction  
 d. all of the above (d)
18. Hot fomentations create which effect?  
 a. analgesic  
 b. anesthetic  
 c. antipyretic  
 d. astringent (a)
19. Which temperature range is classified as hot?  
 a. 92 – 100° F.  
 b. 105 – 110° F.  
 c. 100 – 104° F.  
 d. b and c (c)
20. A salt glow rubdown is:  
 a. sedative  
 b. used to exfoliate dead skin cells  
 c. tonifying and stimulating  
 d. b and c (d)
21. Which is one way to treat high fevers?  
 a. ice pack  
 b. full-body alcohol rub  
 c. steam cabinet  
 d. hot ginger bath (b)
22. Which is a general effect of cold?  
 a. reduced spasm and spasticity  
 b. elevation of physiologic functioning  
 c. hyperthermia and diaphoresis  
 d. increase heart rate and respiratory rate (a)
23. Which has a more potent effect of the body?  
 a. percussive douche  
 b. hubbard tank  
 c. contrast applications  
 d. ice pack (c)
24. Which hydro technique improves immune system enhancement?  
 a. full immersion contrast baths  
 b. cold compress  
 c. chem pack treatment  
 d. herbal wrap (a)
25. Warm baths provide these effects, except:  
 a. soporific  
 b. emetic  
 c. nervine  
 d. sedative (b)
26. Which are contraindications for hydrotherapy?  
 a. fever, diabetes, gout, pregnancy, MS  
 b. BP problems, diabetes, chilblains, fever  
 c. kidney & skin infections, diabetes, fever  
 d. rheumatism, pregnancy, MS, fever, diabetes (c)



27. Derivation is:
- a. abnormal softening of a tissue or organ
  - b. increased peripheral blood flow to relieve congestion (b)
  - c. decreased peripheral blood flow to relieve congestion
  - d. abnormal hardening of a tissue or organ
28. A hot evaporative sheet treatment is used for:
- a. insomnia
  - b. chilblains
  - c. fever (c)
  - d. vertigo
29. Using seaweed for healing purposes is:
- a. balneotherapy
  - b. crenotherapy
  - c. heliotherapy
  - d. thalassotherapy (d)
30. What is not an effect of contrast baths?
- a. marked decrease of blood flow locally and reflexively (a)
  - b. hastens healing process
  - c. increased local metabolism
  - d. increase immune system enhancement
31. Hot fomentations used immediately after an injury do not:
- a. reduce muscle spasm
  - b. increase blood flow
  - c. reduce swelling (c)
  - d. relieve pain
32. Hydrocollator water temperature should be:
- a. 105 – 115° F.
  - b. 125 – 135° F.
  - c. 140 – 150° F.
  - d. 150 – 160° F. (d)
33. Which is not a treatment for an acute sprain or strain?
- a. compression
  - b. ice
  - c. fomentation (c)
  - d. elevation
34. Which is not contraindicated for heat therapy?
- a. diabetes
  - b. edema
  - c. spastic colon (c)
  - d. cancer
35. The safest treatment for an MS patient?
- a. cold packs
  - b. hot whirlpool bath
  - c. neutral whirlpool (c)
  - d. hot sitz bath
36. Which of the following can lower the system metabolic rate?
- a. Russian bath
  - b. sauna
  - c. exercise
  - d. meditation (d)
37. Which organ regulates body temperature?
- a. liver
  - b. skin (b)
  - c. thymus
  - d. kidneys
38. Systemic heat on a diabetic would:
- a. decrease blood sugar (a)
  - b. increase blood sugar
  - c. cause hemorrhage
  - d. no noticeable effect
39. Exercises in a hubbard tank use:
- a. very cold water
  - b. hot water
  - c. cool to cold water
  - d. neutral to lukewarm (d)
40. Affusion is defined as:
- a. a cool to warm mist of water particles
  - b. any therapeutic bath that uses tepid water (c)
  - d. excessive accumulation of serous fluid

41. Medicinal benefit as hot fomentations decrease nerve sensation & relieve pain:
- a. astringent
  - b. anesthetic
  - c. analgesic
  - d. antiseptic
- (c)
42. Medicinal benefit when tepid bath decreases fever:
- a. antiedemic
  - b. cathartic
  - c. antipyretic
  - d. diuretic
- (c)
43. Water transfers heat/cold \_\_\_ times faster than air:
- a. ten
  - b. fifteen
  - c. twenty
  - d. twenty-five
- (d)
44. Medicinal benefit when warm bath combats insomnia:
- a. soporific
  - b. tonic
  - c. rubefacient
  - d. laxative
- (a)
45. Medicinal benefit when ice numbs nerve sensation:
- a. astringent
  - b. anesthetic
  - c. analgesic
  - d. antiseptic
- (b)
46. Medicinal benefit when enema evacuates the bowels:
- a. antiedemic
  - b. cathartic
  - c. antipyretic
  - d. diuretic
- (b)
47. Benefit when hot water increases local circulation:
- a. soporific
  - b. tonic
  - c. rubefacient
  - d. laxative
- (c)
48. The scientific equation for "specific heat" is:  
 \_\_\_ calories of heat <sup>^1</sup> gram of H<sub>2</sub>O by 1° Celsius
- a. seven
  - b. five
  - c. three
  - d. one
- (d)
49. In the "latent heat of fusion", ice is \_\_\_ times more powerful than water:
- a. eighty
  - b. sixty
  - c. forty
  - d. twenty
- (a)
50. In the "latent heat of vaporization", steam is \_\_\_ times more powerful than water:
- a. one hundred twenty
  - b. two hundred forty
  - c. four hundred eighty
  - d. five hundred forty
- (d)
51. Water boils at \_\_\_ degrees Fahrenheit:
- a. one hundred
  - b. one hundred twelve
  - c. two hundred twelve
  - d. two hundred ten
- (c)
52. Heat transferred as water comes in contact with skin:
- a. convection
  - b. conduction
  - c. conversion
  - d. circumduction
- (b)
53. Water freezes at \_\_\_ degrees Fahrenheit:
- a. twenty-two
  - b. twenty-eight
  - c. thirty-two
  - d. absolute zero
- (c)
54. Which is not a water temperature classification?
- a. painfully cold
  - b. painfully hot
  - c. very cold
  - d. dangerously hot
- (a)

55. There are \_\_\_ water temperature classifications:  
 a. eight  
 b. twelve  
 c. nine  
 d. six  
 (c)
56. What is a flat frozen wash cloth called?  
 a. ice bandage  
 b. ice compress  
 c. frozen bandage  
 d. cryo-cloth  
 (c)
57. A short hot application is defined as \_\_\_ minutes:  
 a. < 3  
 b. < 5  
 c. between 1 and 3 minutes  
 d. between 5 and 10 minutes  
 (b)
58. In hydrotherapy, a sitz bath is also called:  
 a. reclining bath  
 b. pelvic bath  
 c. short bath  
 d. half bath  
 (d)
59. Salt scrubs have the following effects, except:  
 a. draws out toxins  
 b. kills bacteria  
 c. destroys viruses  
 d. increases circulation  
 (c)
60. Steam baths have the following effects, except:  
 a. alleviates diaphoresis  
 b. dilates airways  
 c. loosens congestion  
 d. rehydrates skin  
 (a)
61. Crenotherapy is using \_\_\_\_\_ for healing purposes:  
 a. sea water  
 b. mineral water  
 c. bath water  
 d. mud  
 (b)
62. Balneotherapy is using \_\_\_\_\_ for healing purposes:  
 a. sea water  
 b. mineral water  
 c. bath water  
 d. mud  
 (c)
63. What is a "Blitz Guss"?  
 a. type of shower  
 b. scotch hose  
 c. cold water hose  
 d. hot high velocity stream  
 (c)
64. Long hot systemic applications have what effect to the body's circulation?  
 a. depressive  
 b. stimulative  
 c. neutral  
 d. stabilizing  
 (a)
65. What is an affusion of water poured upon the body?  
 a. hose  
 b. shower  
 c. douche  
 d. douse  
 (d)
66. What type of bath alleviates minor arthritic pain?  
 a. hayflower  
 b. oatstraw  
 c. paraffin  
 d. apple cider vinegar  
 (c)
67. Which is a more aggressive friction treatment?  
 a. cold mitten friction  
 b. loofah scrub  
 c. salt scrub  
 d. brush bath  
 (b)
68. In hydrotherapy, a swedish shampoo is what?  
 a. massage with lather  
 b. application using soap suds  
 c. washing hair of head  
 d. bubble bath with sponge  
 (a)

69. In hydrotherapy, a hydromassage is what?  
 a. full immersion whirlpool treatment  
 b. jacuzzi tub with jets  
 c. tub with jets administered by practitioner (c)  
 d. a swedish massage in warm water
70. In hydrotherapy, a sauna is also called:  
 a. hot air bath (a)  
 b. russian bath  
 c. scandinavian bath  
 d. finish stove bath
71. A "sweat lodge" is home-styled \_\_\_\_\_ for religious purposes:  
 a. sento  
 b. hammam  
 c. sauna (c)  
 d. russian bath
72. Which type of bath does not relieve itching?  
 a. bran  
 b. oatstraw (b)  
 c. apple cider vinegar  
 d. chamomile
73. A cool mist vaporizer is primarily used for:  
 a. children and the elderly (a)  
 b. vasoconstriction  
 c. delivering medication  
 d. promote diaphoresis
74. This is the gentlest form of friction treatment:  
 a. washcloth  
 b. sissel mitten  
 c. sponge (c)  
 d. brush
75. Stationary pressurized jets of water & air:  
 a. whirlpool (a)  
 b. jacuzzi  
 c. hydro-vaccilator  
 d. lightning bath
76. Which mineral treats manic depression?  
 a. sodium  
 b. selenium  
 c. lithium (c)  
 d. uranium
77. Which ancient civilization spread the knowledge of hydrotherapy more than any other?  
 a. Greece  
 b. Rome (b)  
 c. Egypt  
 d. Persia
78. Which mineral heals skin wounds quickly?  
 a. zinc (b)  
 b. boron  
 c. copper  
 d. silica
79. How many stages are there to a cold wet sheet?  
 a. two  
 b. three  
 c. four (c)  
 d. five
80. Which herbs help detoxify the body in a wrap?  
 a. marjoram & peppermint  
 b. rosemary & black pepper (b)  
 c. pine needle & grapefruit  
 d. clary sage & lemon grass
81. Which mineral is a laxative?  
 a. manganese  
 b. sulfur  
 c. fluorine  
 d. magnesium sulfate (d)
82. Which is not an effect of a mineral mud wrap?  
 a. moisturizing  
 b. heat retention  
 c. adds trace elements (c)  
 d. draws out pathogenic toxins

83. Which treatment is not good for bursitis?  
 a. ice pack  
 b. hot fomentations  
 c. steambath  
 d. whirlpool
84. Which treatment is not good for gout?  
 a. hot foot bath  
 b. contrasting applications  
 c. ice pack  
 d. warm epsom salt bath
85. Plasters are:  
 a. go on wet & stay wet  
 b. self-administered  
 c. homemade  
 d. commercially manufactured
86. How high does a high colonic reach?  
 a. rectum  
 b. entire large intestine  
 c. ascending colon  
 d. up to and including the sigmoid colon
87. Which is not a contraindication/precautionary note to hydrotherapy:  
 a. rheumatism  
 b. rheumatoid arthritis  
 c. multiple sclerosis  
 d. diabetes
88. Which body wrap treatment is not hot?  
 a. seaweed wrap  
 b. mineral mud wrap  
 c. multi-stage heating wrap  
 d. herbal wrap
89. Cryotherapy should be performed for:  
 a. no longer than 3-5 minutes  
 b. until area turns pale  
 c. until the area turns red  
 d. until the area is numb
90. Which is not an effective way to treat a fever?  
 a. cold shower  
 b. tepid affusion  
 c. graduated bath  
 d. hot evaporative sheet
91. Kneipp therapies use:  
 a. natural mineral springs  
 b. water & herbs  
 c. water & flowers  
 d. various kinds of body wraps
92. What essential oil is contraindicated for pregnancy?  
 a. lemon grass  
 b. oregano  
 c. rosemary  
 d. juniper
93. Cold mitten friction is not good for:  
 a. fever  
 b. immune system enhancement  
 c. increase blood pressure  
 d. slow over stimulation
94. The "R" in the acronym R.I.C.E. stands for:  
 a. rehabilitate  
 b. rehydrate  
 c. rest  
 d. reduction
95. For sprains, ice which body part?  
 a. ligament  
 b. muscle  
 c. tendon  
 d. reticular membrane