Hydrotherapy 1

- Liquid
- Ice
- Steam
Hydrotherapy

**Hydrotherapy**  Internal and external therapeutic use of water and complementary agents.

**Complementary agents**  Soaps, essences, aromatics, minerals, seaweed, salt, carbon dioxide, and oxygen.)
Hot versus Cold

**Thermotherapy**  External therapeutic application of heat. Examples: hot pack, hot compress, hot tub, and herbal wrap.

**Cryotherapy**  External therapeutic application of cold. Examples: cold pack, cold water treading, plantar fasciitis treatment, ice massage, ice bath.
Hydrotherapy Effects

**Intrinsic**  Direct result of the temperature on the tissue it is applied to.

**Reactive**  Result of the body's protective (homeostatic) reaction to the temperature.
Homeostatic Reactions

**Vasodilation**  Enlargement of the vascular lumen's diameter.

**Vasoconstriction**  Narrowing of the vascular lumen's diameter.

**Vasostasis**  Laxity in tone of circulatory vessel wall; retards venous return causing blood to pool at the site.
Thermotherapy
( hot compress, hot pack, hot tub, herbal wrap )
Cryotherapy
(cold pack, cold water treading, plantar fasciitis treatment, ice massage, ice bath)
Factors that contribute to the effects of water on the body

Chemical
Physical
Thermal
Moisture
Factors that contribute to the effects of water on the body

Chemical factors (AKA: mineral content)  Minerals dissolve very easily in water to form a therapeutic solution that can be applied externally or taken internally. pH or other chemical properties are altered by the addition of minerals to water.
Chemical (mineral content)
Osmosis

Side A: Dilute solution
Side B: Concentrated solution

Selectively permeable membrane

Fig. 18-5. Osmosis.

From Hoeflich B. The human body in health and illness, ed 4, St. Louis, 2011, Mosby.
Factors that contribute to the effects of water on the body

Physical factors (AKA: mechanical effect)  Water weighs 8.33 lbs./gallon.
Factors that contribute to the effects of water on the body

Hydrostatic pressure (AKA: Law of Pascal)  When the body is immersed in water, the sideways pressure exerted against the body is uniform. This pressure increases with depth and fluid density. This pressure reduces edema (swelling) and generally facilitates blood and lymph flow. 1 hour immersed in water increases urination by 50%.
Factors that contribute to the effects of water on the body

**Principle of relative density**  Buoyancy “unloads” the body of much of its weight allowing range of motion with reduced stress.

<table>
<thead>
<tr>
<th>Density</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Density of water</td>
</tr>
<tr>
<td>.01</td>
<td>Density of adult human</td>
</tr>
<tr>
<td>&gt; 1.0</td>
<td>Density of water with minerals added</td>
</tr>
</tbody>
</table>
Hydrostatic Pressure and Relative Density
Factors that contribute to the effects of water on the body

Thermal factors (AKA: temperature effect)  The greater the difference between the body temperature and water temperature, the greater the effect will be.
The body's homeostatic response to temperature

**Vasoconstriction**  Narrowing of the vascular lumen's diameter.

**Vasodilation**  Enlargement of the vascular lumen's diameter.

**Vasostasis**  Laxity in tone of circulatory vessel wall. Retards venous return causing blood to pool at the site.
Factors that contribute to the effects of water on the body

Moisture factors (AKA: wetness) Percentage of moisture contributes pros and cons to hydrotherapy treatments.

Steam bath Moisture content: 100%. Moistens nasal passages and throat. Keeps skin supple. Breathing difficulties due to heaviness of the air.

Sauna Moisture content: 10 - 20%. Easier to breath. Drying and irritating to skin and mucous membranes.
Hydrotherapy
To promote wellness or address pathology

Relax, pamper, cleanse, beautify:
  Dry brush, facial, foot treatment, and herbal wrap.

Clinical therapy for pathology:
  Cold wash, cold water treading, hot treatment, cold treatment, contrast bath.
Useful Properties of Water

Availability
Safety
High-conductivity
Fluidity
High specific heat
Latent heats
Useful Properties of Water

Availability
Water is cheap and found everywhere.

Safety
Water is non-toxic, easy to clean up, and does not stain.
Useful Properties of Water

High-conductivity

Water gives up its heat or cold readily to another object.

Fluidity

Water conforms easily to the shape of the body, providing for even more effective conduction.
Useful Properties of Water

High specific heat
Water can store a lot of heat or cold.

Latent heats
Water allows a lot more transfer of heat and cold at temperatures we can readily access.
Contraindications for Thermotherapy

- Acute injury (abrupt onset, short duration)
- Autoimmune conditions (self-attacking)
- Fresh bruises (skin discoloration)
- Hemorrhaging (bleeding)
- Recent burns (including sunburns)
- Cardiac impairment (heart problems)
- Stroke survivors (lack of blood flow to brain)
- Edema (swelling)
- Cases of fever (body temp above 98°-100° F)
- Hypertension (blood pressure above 140/90)
- Hypotension (blood pressure under 90/60)
Contraindications for Thermotherapy, continued

Inflammation (pain, heat, swelling, redness, loss of function)
Chronic illness (persistent or long-lasting)
Significant obesity (excess body fat)
Open wounds (blisters and abrasions)
Phlebitis (inflammation of veins)
Pregnancy (except for paraffin treatments)
Rosacea (facial redness)
Skin rash (abnormal color, texture, appearance)
Sensory impairment (unable to properly sense pressure and pain)
Contraindications for Cryotherapy

Arthritis (joint inflammation)
Stroke survivors (lack of blood flow to brain)
Open wounds (cuts, blisters, abrasions)
Hypertension (blood pressure above 140/90)
Raynaud's Syndrome (sensitivity to cold)
Fibromyalgia (tender points, fatigue, sleep, depressed mood, headaches, problems)
Rheumatoid conditions (chronic systemic inflammation)
Any sensory impairment (not able to detect unsafe temperature changes)
Skin Infection (pathogenic invasion)
Rashes (abnormal color, texture, appearance)
Endometriosis (cells from the lining of the uterus appear and flourish outside the uterine cavity, most commonly on the ovaries)
### Variables of Hydrotherapy

<table>
<thead>
<tr>
<th>Character of Effect</th>
<th>Intrinsic or extrinsic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Effect on Metabolism and Circulation</td>
<td>Stimulative or Depressive</td>
</tr>
<tr>
<td>Temperature</td>
<td>Hot or Cold</td>
</tr>
</tbody>
</table>
Character of Effects

**Intrinsic**  Direct result of the temperature on the tissue it is applied to.

**Reactive**  Result of the body's protective reaction to the temperature.
Type of Effect

Stimulative

Circulation: vasodilation

Metabolism: increased oxygen absorption, carbon dioxide excretion, and increasing demand for fuel (energy sources)
Type of Effect

Depressive

Circulation: vasoconstriction or vasostasis.

Metabolism: decreased oxygen absorption and carbon dioxide excretion.
Temperatures

For Hydrotherapy purposes:

- Hot: 105º F to 110º F
- Cold: 55º F to 65º F
# Thermotherapy Treatments

<table>
<thead>
<tr>
<th>Short hot</th>
<th>Long hot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature: 105-110°F</td>
<td>Temperature: 105-110°F</td>
</tr>
<tr>
<td>Time: &lt; 5 minutes</td>
<td>Time: &gt; 5 minutes</td>
</tr>
<tr>
<td>Circulation: stimulated</td>
<td>Circulation: depressed</td>
</tr>
<tr>
<td>Metabolism: stimulated</td>
<td>Metabolism: stimulated</td>
</tr>
<tr>
<td>Tissue tone: decreased</td>
<td>Tissue tone: decreased</td>
</tr>
<tr>
<td>Flexibility: increased</td>
<td>Flexibility: increased</td>
</tr>
</tbody>
</table>
1. Vasodilation
2. Vasostasis
## Cryotherapy Treatments

<table>
<thead>
<tr>
<th>Short cold</th>
<th>Long cold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature: 55-65° F</td>
<td>Temperature: 55-65° F</td>
</tr>
<tr>
<td>Time: &lt; 1 minute</td>
<td>Time: &gt; 1 minute</td>
</tr>
<tr>
<td>Circulation: stimulated</td>
<td>Circulation: depressed</td>
</tr>
<tr>
<td>Metabolism: stimulated</td>
<td>Metabolism: depressed</td>
</tr>
<tr>
<td>Tissue tone: increased</td>
<td>Tissue tone: increased</td>
</tr>
<tr>
<td>Inflammation: decreased</td>
<td>Inflammation: decreased</td>
</tr>
</tbody>
</table>
1. Vasoconstriction
2. Vasodilation
3. Vasoconstriction

Circulation

Metabolism

(minutes) 0 1 2 3

Short Cold  Long Cold
**Contrast Bath**
Short Hot, Short Cold, Repeat up to Three Times

<table>
<thead>
<tr>
<th>Short hot</th>
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<tbody>
<tr>
<td>Temperature: 105-110° F</td>
<td>Temperature: 55-65° F</td>
</tr>
<tr>
<td>Time: 1 minute</td>
<td>Time: 30 seconds</td>
</tr>
<tr>
<td>OR</td>
<td>OR</td>
</tr>
<tr>
<td>Time: 3 minutes</td>
<td>Time: 1 minute</td>
</tr>
</tbody>
</table>

This is the most effective means of flushing the area with fresh blood.
1. Vasodilation
2. Vasodilation

Circulation
Metabolism

(minutes) 0 1 2 3 4 5 6 7 8 9 10 11
Dangers of long hot treatments

- Circulation depressed
- Metabolism increased
- Lack of nutrient delivery and waste removal at the same time as increased consumption of nutrients by cells can result in toxic tissues.
Avoiding the dangers of Long Hot Treatments by stimulating circulation

- Exercise
- Massage
- Cold application
Long cold treatment effect on an acute inflammation or nerve root compression

- Local metabolism is slowed which kills pain by causing the neurons to fire more slowly.
- Reduces the likelihood of secondary cell death.
- Minimizes swelling.
Hydrotherapy Precautions

Q. Why should there always be time for the client to rest after a hydrotherapy treatment?
Hydrotherapy Precautions

Q. Why should there always be time for the client to rest after a hydrotherapy treatment?

A. To allow the body time to recover from the reactive effects.
Hydrotherapy Precautions

Q. Why should hot always be followed by cold in hydrotherapy?
Hydrotherapy Precautions

Q. Why should hot always be followed by cold in hydrotherapy?

A. To prevent vasostasis caused by hot treatment.

Always start with HOT, always end with COLD
Hydrotherapy Precautions

Q. Why treat the young, old, feeble, and obese with care especially while doing cold hydrotherapy applications?
Hydrotherapy Precautions

Q. Why treat the young, old, feeble, and obese with care especially while doing cold hydrotherapy applications?

A. Poor capacity to respond to intense treatments.
Hydrotherapy Precautions

Q. What should you do if your client is chilled by a hydrotherapy treatment?
Hydrotherapy Precautions

Q. What should you do if your client is chilled by a hydrotherapy treatment?

A. Stop the treatment and warm the client with heat, friction, blankets and warm drinks.
Hydrotherapy Precautions

Q. Why should hydrotherapy be administered before meals?
Hydrotherapy Precautions

Q. Why should hydrotherapy be administered before meals?

A. To avoid interference with food digestion.
Hydro 2

Treatments: Dry Brushing, Cold Wash, Foot Treatment.

Bring:

1 natural bristle dry brush (sold at the front desk)
2 washcloths
2 regular towels
Sheets
Plastic trash bag
Hydro 3

Treatments: Cold water treading, Facial, Herbal wrap

Bring:

2 LARGE beach towels (or 4 regular towels)
2 washcloths
1 additional regular towel
Flips-flops or sandals that can get wet
Sheets, facial toner, cotton pads and a plastic trash bag
Hydro 4

Treatments: Heat treatment, Cold treatment, Contrast Bath

Bring:

- 4 regular towels
- Sheets
- Plastic trash bag
Hydrotherapy 1

Liquid

Ice

Steam
Dry Brushing, VI:7

Removes build-up of dead skin cells on the surface.

Stimulates lymphatic drainage.

Improves arthritis, cellulite, hypertension, and depression.

Same lymphatic benefit as a massage or 20 minutes jogging.
Dry Brushing, VI:8

Work distal to proximal, lateral to medial, toward the heart (centripetally).

Avoid the face.

Eczema, psoriasis, open or infectious skin, and varicose veins are contraindications for dry brushing.

Daily for 5 minutes before a shower.
Face Treatment, VI:14

Supplies needed:

Moisturizing cream
Witch Hazel or non-alcohol face toner
Cotton balls or pads
Facial clay mask
Wash cloth
Plastic tub with warm water
Do the face routine (clean, moisturize, massage).

Remove moisturizer and open pores with a warm, wet wash cloth.

THINLY apply clay mask. Avoid lips, eyes, and hairline.

Allow it to dry. (it will look lighter in color).
Face Treatment, VI:14

Hold a warm, damp washcloth to a small area of the face.

Allow this to rehydrate the mask for easy removal.

DO NOT scrub the mask off of their face!

Repeat the face routine.
Foot Treatment, VI:18

Supplies needed:

Plastic tub for soaking feet
Hot and cold water for the tub
Mineral salt bath crystals
Sloughing cream
Wooden manicure stick
Wash cloth
2 regular towels
Moisturizing lotion
Soak feet for 10 minutes.
Remove one foot and lightly dry it with a towel.
Remove dead cuticle skin from each toe nail (manicure stick).
Scrub foot with sloughing cream and place back in tub.
Rinse sloughing cream from foot.
Repeat on other foot.
Remove and dry both feet. Moisturize them.
Hydrotherapy 1

- Liquid
- Ice
- Steam