Three forms of water

Liquid

Ice

Steam
Hydrotherapy

Hydro 1
Packet IV:1

How to use water for comfort, relaxation, and healing.

Four hydrotherapy classes now,
Two hydrotherapy classes much later

Only 2 graded assignments . . .
1st graded assignment = RQ #3b

Packet IX:19-20

(they are due Thursday February 7th, 2013)
2nd graded assignment = Hydrotherapy Quiz

Thursday February 14th, 2013

Know the material listed on the lower half of page IV:1
Hydrotherapy

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

(In case you were wondering . . .

Agents include soaps, essences, aromatics, minerals, seaweed, salt, carbon dioxide, and oxygen.)
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.
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.
Thermotherapy
hot compress, hot pack, hot tub, herbal wrap
Cryotherapy

cold pack, cold water treading, plantar fasciitis treatment, ice massage, ice bath
Turn the page to IV:2
Hydro II

When: Tues. morning / Wed. evening / Sat. morning

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 III

When: Next week Tues. morning / Wed. evening / Sat. morning

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 IV

**When:** Next week Tues. afternoon / Thurs. evening / Sat. afternoon.

**Treatments:** Heat treatment, Cold treatment, Contrast Bath

**Bring:**
- 4 regular towels
- Sheets
- Plastic trash bag
Introduction to Hydrotherapy
Factors that contribute to the effects of water on the body

Chemical (mineral content)
Physical (mechanical effect)
Thermal (temperature)
Moisture (wetness)
Chemical (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
Physical (mechanical effect)

Water weighs 8.33 lbs. per gallon.

**Hydrostatic Pressure**

The Law of Pascal

**Density**

Principle of Relative Density
Physical (mechanical effect)

**Hydrostatic Pressure**

When the body is immersed in water, the sideways pressure exerted against the body is uniform. This pressure increases with depth and fluid density.
Physical (mechanical effect)

Hydrostatic Pressure

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.
Physical (mechanical effect)

**Hydrostatic Pressure**

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%.
Physical (mechanical effect)

Relative Density

Water: 1.0
Adult human: .097
Water with minerals added: greater than 1.0

Buoyancy “unloads” the body of much of its weight allowing range of motion with reduced stress.
Thermal (temperature)

The greater the difference between the body temperature and water temperature, the greater the effect will be.
Thermal (temperature)

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.

Result: Increased/decreased blood and lymph flow
Thermal (temperature)
Moisture

Steam Bath
Moisture content: 100%

Benefits:
  Moistens nasal passages and throat
  Keeps skin supple

Cautions:
  Breathing difficulties due to heaviness of the air
Moisture

Sauna
Moisture content: 10 - 20%

Benefits: Easier to breath

Cautions:
   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
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 to Hydrotherapy
Contraindications for Heat

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)*
Contraindications for Heat, continued

Edema (swelling)

Cases of fever (body temp above 98°-100° F)

Hypertension (blood pressure above 140/90)

Hypotension (blood pressure under 90/60)

Inflammation

(pain, heat, swelling, redness, loss of function)

Chronic illness (persistent or long-lasting)
Contraindications for Heat, continued

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 (sight, smell, hearing . . .)
Contraindications for Cold

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*)
Contraindications for Cold

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)
Local Effects of Hydrotherapy on Tissues
Character of 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.
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.
List of Temperatures

For Hydrotherapy purposes:

– Hot: 105º F to 110º F

– Cold: 55º F to 65º F
Hot Application Results

**Short hot**
- Temperature: 105-110° F
- Time: < 5 minutes
- Circulation: stimulated (intrinsic vasodilation)
- Metabolism: stimulated
- Tissue tone: decreased
- Flexibility: increased

**Long hot**
- Temperature: 105-110° F
- Time: > 5 minutes
- Circulation: depressed (reactive vasostasis)
- Metabolism: stimulated
- Tissue tone: decreased
- Flexibility: increased
## Cold Application Results

<table>
<thead>
<tr>
<th>Short cold</th>
<th>Long cold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature: 55-65º F</td>
<td>Temperature: 55-65º 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>(reactive vasodilation)</td>
<td>(intrinsic vasoconstriction)</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>
Turn the page to IV:26

Bottom of the page
Contrast Baths
Contrast Bath:
Short Hot, Short Cold, Repeat

**Short hot**
- Temperature: 105-110° F
- Time: 1 minute

OR
- Time: 3 minutes

**Short cold**
- Temperature: 55-65° F
- Time: 30 seconds

OR
- Time: 1 minute

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

Circulation

Metabolism

(minutes) 0 1 2 3

Short Cold
Long Cold
1. Vasodilation
2. Vasostasis

Circulation
Metabolism

(minutes) 0 1 2 3 4 5 6 7 8

Short Hot
Long Hot
1. Vasodilation
2. Vasodilation

Circulation
Metabolism

(minutes) 0 1 2 3 4 5 6 7 8 9 10 11

Hot
Cold
No application
Survey of Hydrotherapy
Modalities and Methods
Balneology / Balneotherapy
Therapeutic use of baths.

Crenology / Crenotherapy
Therapeutic use of mineral water.
Ablution

Applying water by hand using a towel or bath mitt. (cold water wash)

Affusion

Pouring water in a stream onto the body. (to lower body temperature during fever)
Poultice / Cataplasm

A soft, moist mass spread between the layers of cloth and applied hot to create moist, local heat or to counter irritation. (mustard plaster)

Compress

A pad of moist, folded linen applied with pressure, sometimes it is medicated.
Heating compress

A mild application of moist heat for several hours by means of a cold compress applied to a part and covered with dry flannel which allows the compress to be warmed by the circulation it stimulates.

THIS IS NOT A HOT COMPRESS!
Heating Compress
Fomentation /Stupe

A very hot, moist application, usually made of wool and sometimes medicated.

Alternate

A series of alternating hot and cold applications to the same body area consisting of at least three applications of each, the duration of the cold being \( \frac{1}{4} \) to \( \frac{1}{2} \) as long as the hot. (contrast baths)
Alternating or Contrast Bath
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 II, IV-2

When: Thursday morning

Treatments: Dry Brush, Cold Wash, Foot Treatment.

Bring:

1 natural bristle dry brush
2 washcloths
1 regular towel
Sheets and a plastic trash bag
Hydro III, IV-2

When: Monday
Treatments: Cold water treading, Herbal wrap
Bring:
  2 LARGE beach towels or 4 regular towels
  2 washcloths
  1 regular towel
  Flips-flops or sandals that can get wet
  Sheets, facial toner, cotton pads and a plastic trash bag
Hydro IV, IV-2

**When:** Thursday next week

**Treatments:** Heat treatment, Cold treatment, Contrast Bath

**Bring:**
- 4 regular towels
- Sheets, facial toner, cotton pads and a plastic trash bag
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.
Dry Brushing, VI:8
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
Face Treatment, VI:14

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
Foot Treatment, VI:18

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.
Gate Control Theory of Pain Relief

When multiple signals are competing for the same gate or entrance into the spinal cord, the first signal through the gate blocks all other signals.

Massage Therapy: Principles and Practice, Fourth Edition, Page 100 in Box 6-2
Gate Control Theory of Pain Relief

Nerves that sense pressure, temperature, and sharp acute pain near the surface of the skin are larger in diameter and transmit signals very quickly.

Smaller diameter nerves that sense chronic pain are much slower.

Therefore pressure, heat, and cold can interrupt pain.