



## 24b Hydrotherapy: Theory and Technique Demo



## 24b Hydrotherapy: Theory and Technique Demo Class Outline

20 minutes	Break
10 minutes	Attendance, Breath of Arrival, and Reminders
60 minutes	Lecture: G 1-7
15 minutes	Break
45 minutes	Lecture: G 8-13
15 minutes	Break
50 minutes	Video and demo- dry brush, cold water wash, hand and foot scrub, work place examples
3 hours and 25 minutes with 5 minutes of flex	



# 24b Hydrotherapy: Theory and Technique Demo

## Class Reminders

### Quizzes:

- 30a Kinesiology Quiz
  - Supraspinatus, infraspinatus, teres minor, subscapularis, pec minor, & serratus anterior
- 31a Quiz (20a, 20b, 21b, 22a, 23a, 24b, 29b, and 30a, 24a, 25a, 26a, 27a, 28a, 29a, 30b, and 31b)

### Assignments:

- 30a Review Questions
  - Packet A: 141-158

### Preparation for upcoming classes:

- 25a A&P: Muscular System: Mechanism of Contraction
  - Trail Guide: subscapularis
  - Packet E: 41-44
- 25b Hydrotherapy: Dry Brushing, Cold Water Wash, Hand and Foot Treatment
  - Packet G: 15-19



# Classroom Rules

**Punctuality** - everybody's time is precious

- Be ready to learn at the start of class; we'll have you out of here on time
- Tardiness: arriving late, returning late after breaks, leaving during class, leaving early

**The following are not allowed:**

- Bare feet
- Side talking
- Lying down
- Inappropriate clothing
- Food or drink except water
- Phones that are visible in the classroom, bathrooms, or internship

*You will receive one verbal warning, then you'll have to leave the room.*

## 24b Hydrotherapy: Theory and Technique Demo

Liquid



Ice



Steam



**Please turn to page G-1 . . .**



# Hydrotherapy

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

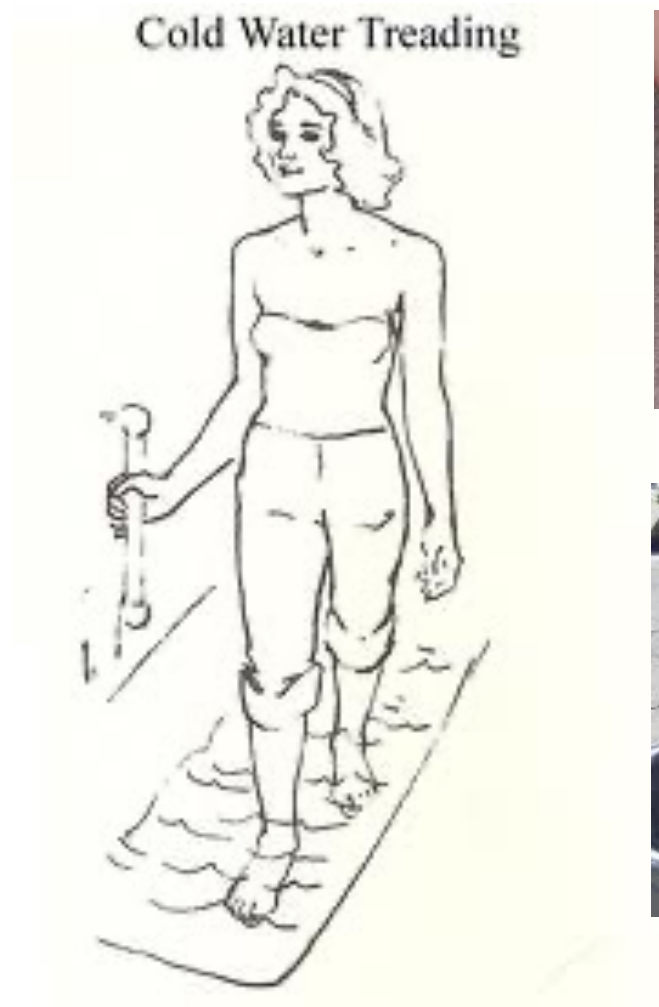
**Complementary agents** Soaps, essences, aromatics, minerals, seaweed, salt, carbon dioxide, and oxygen.

# Thermotherapy

( hot compress, hot pack, hot tub, herbal wrap )



Cryotherapy  
(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.



## Factors that contribute to the effects of water on the body

- Chemical
- Physical
- Thermal
- Moisture



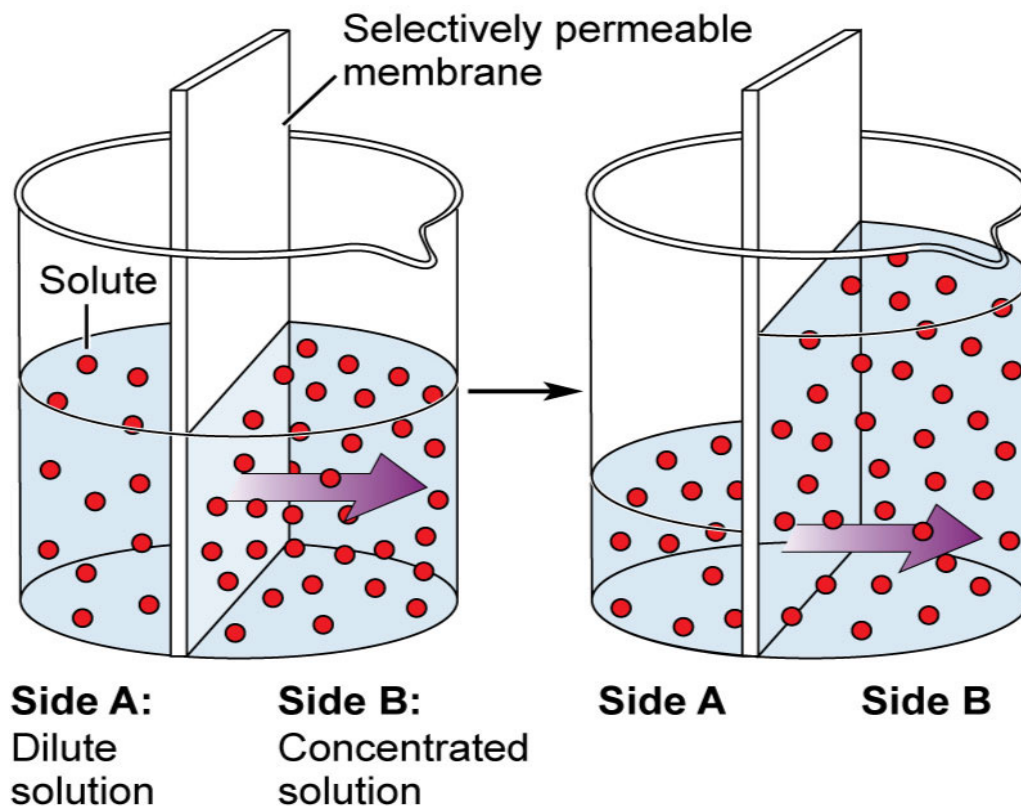
## Factors that contribute to the effects of water on the body

**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



From Herlitz B: *The human body in health and illness*, ed 4, St. Louis, 2011, Mosby.

Fig. 18-5. Osmosis.





## 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

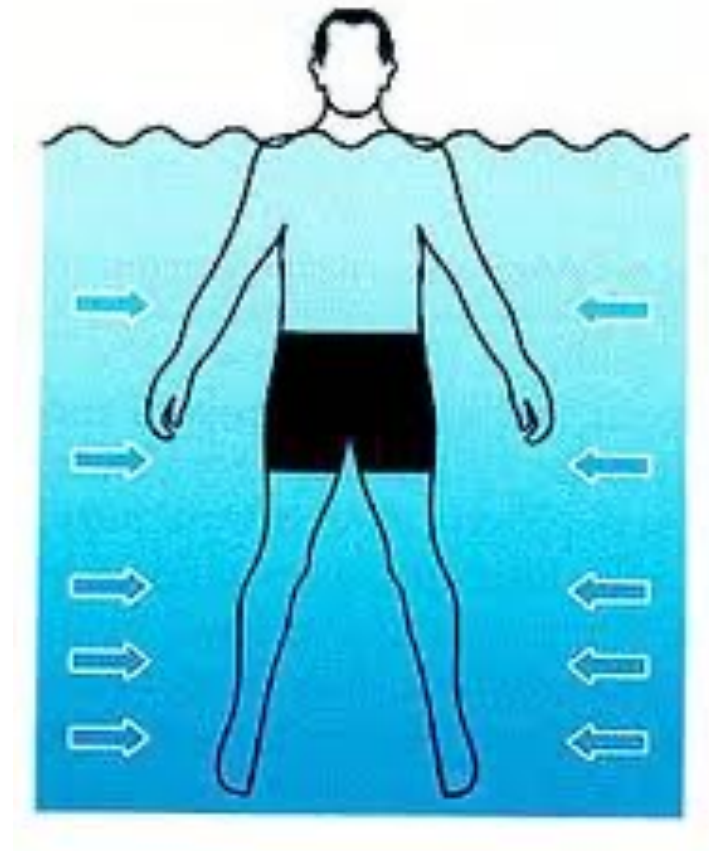
- **Principle of relative density** Buoyancy “unloads” the body of much of its weight allowing range of motion with reduced stress.

Density of water = 1.0

Density of water with minerals added is greater than 1.0

Density of adult human = 0.97

# 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.





## Factors that contribute to the effects of water on the body

### Thermal Factors

- **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:**

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

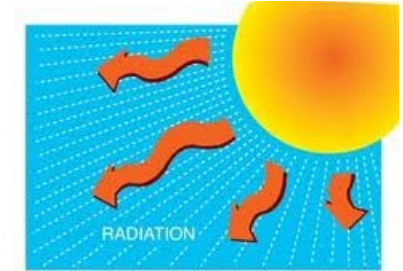
**Availability** Water is cheap and found everywhere.

**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.

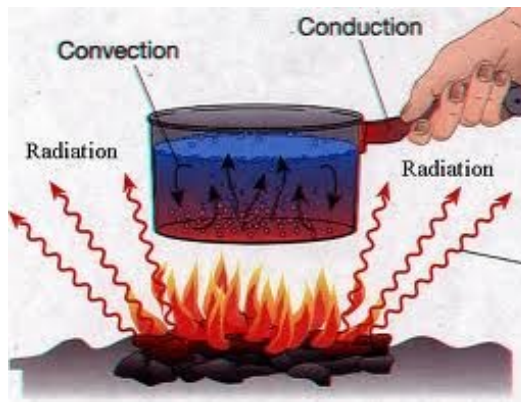


# Useful Properties of Water

**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)
- Fever (body temp above 98<sup>0</sup> - 100<sup>0</sup> 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 (abrasions, blisters, cuts, etc)
- 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 (abrasions, blisters, and cuts)
- 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

Character of Effect: Intrinsic or extrinsic

Type of Effect on Metabolism and Circulation: Stimulative or Depressive

Temperature: Hot or Cold



## 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: 105° F to 110° F
- Cold: 55° F to 65° F



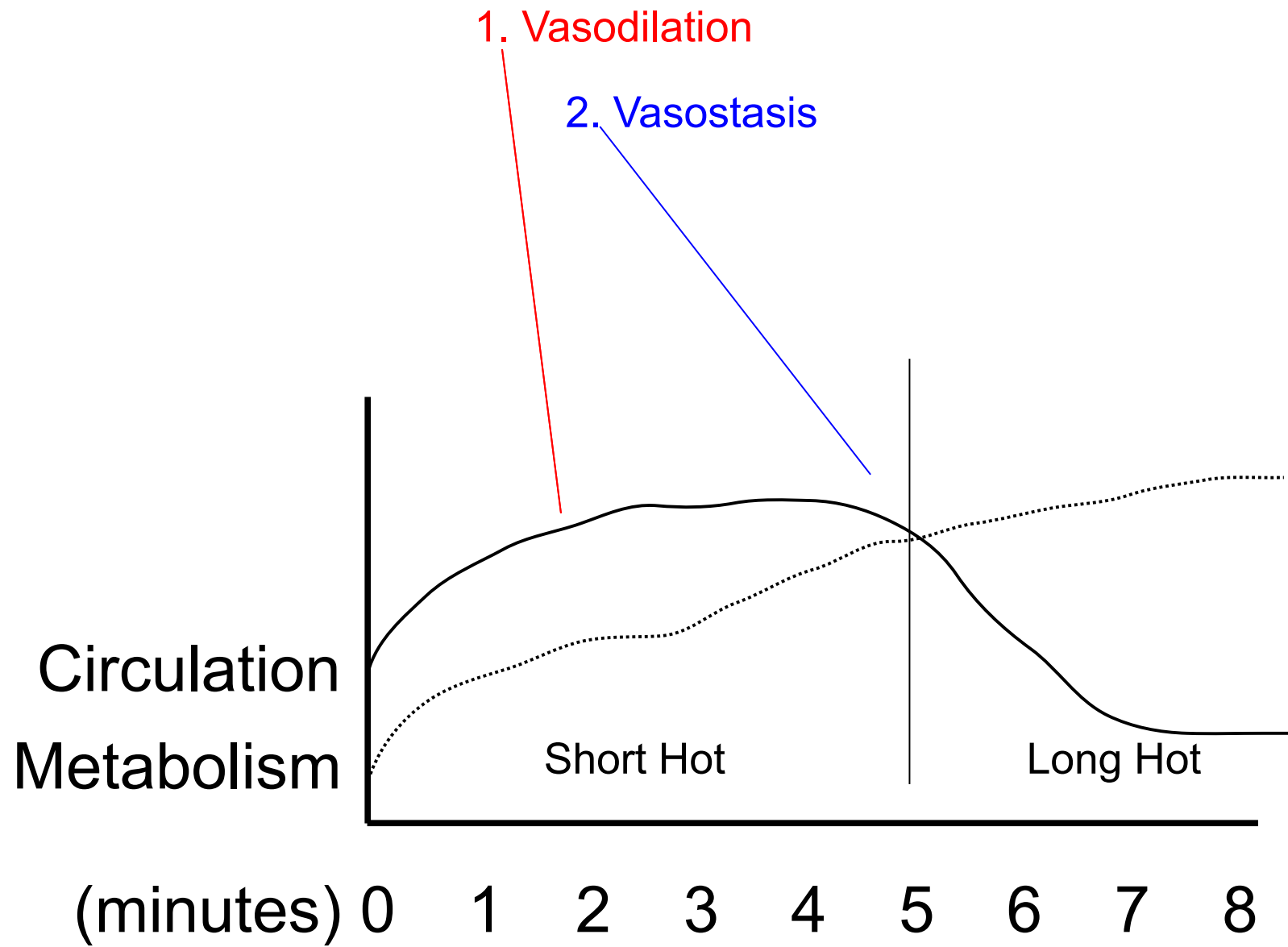
# Thermotherapy Treatments

## 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





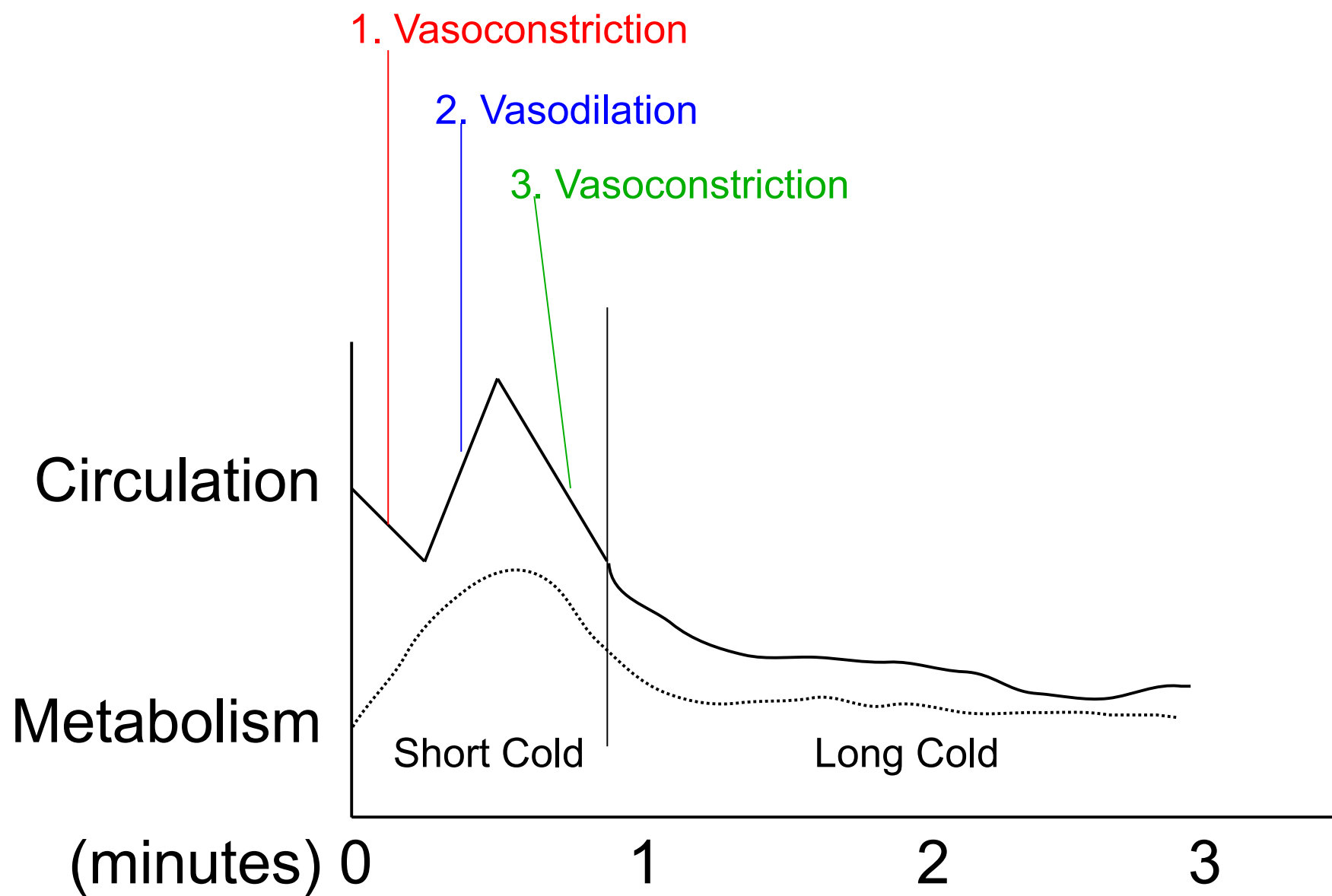
# Cryotherapy Treatments

## Short cold

- Temperature: 55-65° F
- Time: < 1 minute
- Circulation: stimulated  
(reactive vasodilation)
- Metabolism: stimulated
- Tissue tone: increased
- Inflammation: decreased

## Long cold

- Temperature: 55-65° F
- Time: > 1 minute
- Circulation: depressed  
(intrinsic vasoconstriction)
- Metabolism: depressed
- Tissue tone: increased
- Inflammation: decreased





## Contrast Bath (short hot, short cold, repeat up to 3 times)

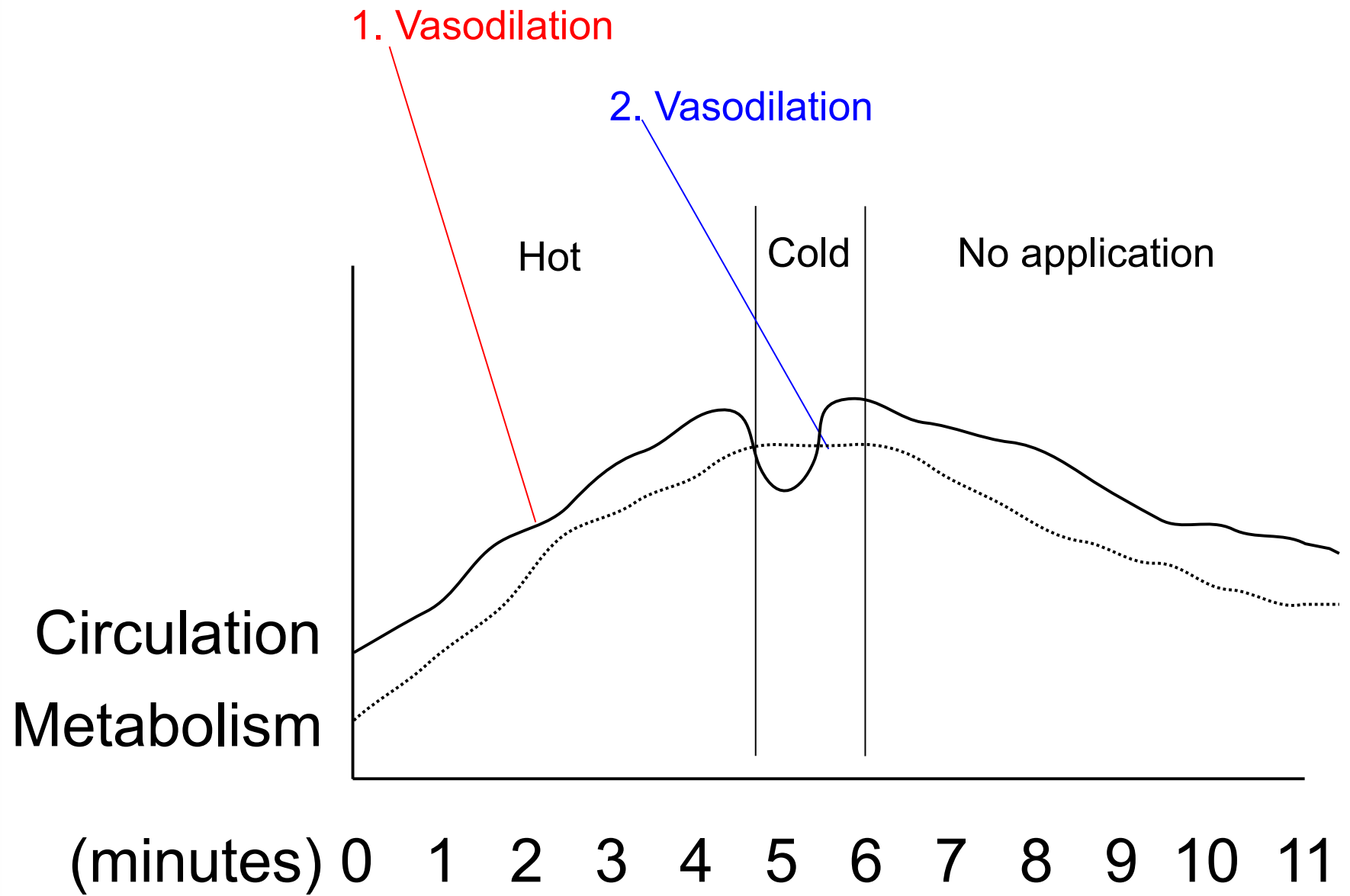
### Short hot

- Temperature: 105-110° F
- Time: 1 minute OR 3 minutes

### Short cold

- Temperature: 55-65° F
- Time: 30 seconds OR 1 minute

Note: 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



## Acute Inflammation or Nerve Root Compression

The effects of long, cold treatments are:

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



# 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 (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!
- **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)



## Hydrotherapy Precautions: Question and Answer

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



## Hydrotherapy Precautions: Question and Answer

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: Question and Answer

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



## Hydrotherapy Precautions: Question and Answer

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: Question and Answer

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

# Hydrotherapy Precautions: Question and Answer

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: Question and Answer

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



# Hydrotherapy Precautions: Question and Answer

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.





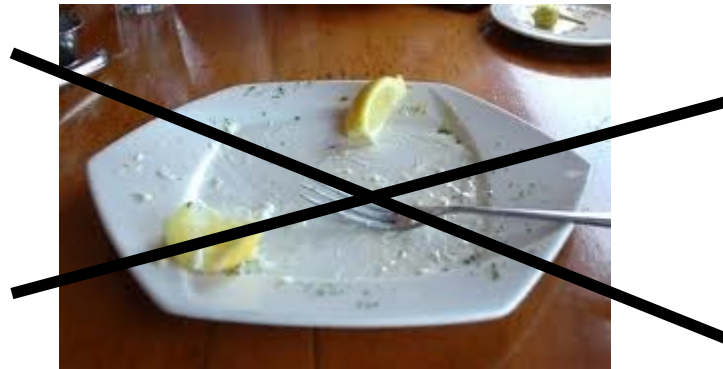
# Hydrotherapy Precautions: Question and Answer

Q. Why should hydrotherapy be administered before meals?

# Hydrotherapy Precautions: Question and Answer

Q. Why should hydrotherapy be administered before meals?

A. To avoid interference with food digestion.





## Dry Brushing, page G-15

### Materials supplied by the student

- 1 natural bristle dry brush (sold at front desk)
- 1 set of sheets and blanket

### Basic information

- 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.
- Work distal to proximal, lateral to medial, toward the heart (centripetally), and toward the intestines.
- 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, page G-15

Generally done with strokes toward the heart, but smaller circular strokes may be interspersed to fit special areas or intensify the treatment.

Occasionally you may wish to wash the brush to remove excess body oils. Detergent and water will suffice for this.

To disinfect (which you must do if to be used on another person) soak the brush for a few minutes in a 10:1 household bleach solution (10 parts water to 1 part household bleach). Then wash with detergent and water. Don't soak too long or the wooden part of the brush will be adversely affected by water.





## Dry Brushing, page G-16

### SUPINE (drape chest before beginning)

1. Begin with the right side always
2. Do sole of foot
3. Brush dorsum of foot, lower leg, thigh; stroking towards the heart, working lateral to medial
4. Repeat on left foot and leg
5. Right hand and arm (dorsum first), stroking toward the heart, working lateral to medial
6. Left arm
7. Right, then left side of neck, stroking down and out, working lateral to medial
8. Stroke down from the clavicles to abdomen, and /or work horizontally (lateral to medial) across the chest and ribs (avoid nipples)
9. Clockwise strokes around abdomen

### PRONE

1. Up back of legs, up and around glutes, medial to lateral (right leg, then left)
2. Down neck, out shoulders
3. Circle around scapulae
4. Down erector, and /or horizontal strokes, sweeping in from sides to middle, down the back



## Cold Water Wash, page G-17

### Materials supplied by the student

- Wash cloth
- 1 set of sheets and blanket
- 1 medium trash bag for wet towels

### Materials supplied by TLC

- Plastic tub for cold water
- Cold water for tub (55<sup>0</sup> - 65<sup>0</sup> F)



## Cold Water Wash, page G-17

Body washing is done in the early morning while still in bed. The body must be warm before washing is done. If you are doing your own body washing, you will find it nice to do it around 5 am. Then you have time to get back in bed and get warmed. The person should always be warm before the washing.

A thick washcloth is used. It is folded then immersed in cold water (55° to 65° F). Squeeze the cloth so it is still good and wet but not dripping. It is important to wash each area quickly and cover it up immediately. After the treatment is done, wrap the person well.

After the body washing the person is not dried off but returns to bed and is covered thoroughly with blankets. The body has to work to re-warm the skin. A friction mitt may be used but has to be dipped in the water much more frequently. In those persons with sensitive skin, a small glass of vinegar may be added to the water. If one is too sensitive to cold or dislikes body washing, dry brushing may be substituted.



## Cold Water Wash, page G-18

### PRONE

1. Right neck and back - stroke down to the Iliac Crest/Sacrum and back up
2. Repeat on the left side
3. Right Leg-stroke down the lateral side (including glutes), up the back of the leg, and down the medial side (inside) of the leg.
4. Repeat on the left side

### SUPINE (drape chest before beginning)

5. Right leg-stroke down the lateral side (outside), up the front, down the medial side (inside of the leg) - take care not to be invasive.
6. Repeat on the left leg.
7. Stroke down and up the right side of the torso.
8. Repeat on the left torso.
9. Stroke around the abdomen (clockwise)
10. Right hand and arm - stroke up the dorsal surface, up the outside, and down the inside - wash 2 times in the axilla and cover quickly.
11. Repeat on left arm
12. Stroke down and out the right side of the neck.
13. Repeat on left side of neck.



## Hand & Foot Treatment, page G-19

Supplies- supplied by student

- ½ cup of ground coffee or sea salt (In a zip lock bag)
- Massage cream or lotion
- Small mixing bowl or non-breakable cup
- Spoon or utensil to mix with
- 3 bath towels
- 6 hand Towels
- 1 set of sheets and blanket
- 1 medium trash bag for wet towels

**Please review Video Material on the student resource page, full class videos class 25b or on main video page in student resources.**



## Supine Hand Treatment, page G-19

1. Lay hand towel under hand and arm up to the elbow
2. Apply pre-made scrub of either sugar, coffee or sea salt mixed with base cream to hand and forearm.
3. Scrub material into the skin and potential rough or dry areas to hydrate skin, while providing massage to all muscles of the hand and fingers.
4. Once application/ massage is complete take hot moist towel from microwave or slow cooker, shake out briefly so as not to burn your client and fold in half long ways, then apply to forearm and hand.



## Supine Hand Treatment, page G-19

5. In one deep stroke drag towel distally down the arm and hand to remove product from skin. Repeat until arm and hand(s) are clean.
6. Lift arm and fold the towel under the arm in half to capture remnants of scrub material and remove from massage table.
7. Cover arm(s) with sheet and blanket
8. Repeat on other side
9. Apply massage lotion, cream or oil for massage

### Benefits and uses:

Increased localized circulation to areas of concentration, exfoliating skin and moisturizing of the area and deep relaxation. Great add on treatment in a private practice or small spa.



## Supine Foot Treatment, page G-19

1. Lay hand towel under feet & ankles up to the calves
2. Apply pre-made scrub of either sugar, coffee or sea salt mixed with base cream to feet & lower leg.
3. Scrub material into the skin and potential rough or dry areas to hydrate skin, while providing massage to all muscles of the feet and lower leg.
4. Once application/ massage is complete take hot moist towel from microwave or slow cooker, shake out briefly so as not to burn your client and fold in half long ways, then apply to lower leg & foot.





## Supine Foot Treatment, page G-19

5. In one deep stroke drag towel distally down the lower leg and feet to remove product from skin. Repeat until lower leg & feet are clean.
6. Lift foot/lower leg and fold the towel under the arm in half to capture remnants of scrub material and remove from massage table.
7. Cover lower leg & feet with sheet and blanket
8. Repeat on other side
9. Apply massage lotion, cream or oil for massage

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Increased localized circulation to areas of concentration, exfoliating skin and moisturizing of the area and deep relaxation. Great add on treatment in a private practice or small spa.

## 24b Hydrotherapy: Theory and Technique Demo

Liquid



Ice



Steam

