HYDROTHERAPY

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OBJECTIVES

- Define Cryotherapy.
- List different methods of cool transfer to body tissues.
- Explain the physiological effects of Cryotherapy.
- List indications, contraindications, and precautions of Cryotherapy.
- Identify different techniques of Cryotherapy application.
HEAT VERSUS COLD
THE CHOICE WHETHER TO USE HEAT OR COLD DEPENDS ON

- Stage of injury or disease.
- Area of body treated.
- Patient preference, determined by cold or heat hypersensitivity.
- The desired physiological response.
- The type and amount of tissue damaged.
- Patient's physical and psychological state.
CRYOTHERAPY

- Acute stage of injury inflammation
- Vasoconstriction leads to:
  - ↓ metabolic rate
  - ↓ inflammation
  - ↓ pain
- Heat at this stage → aggravate inflammation
- The first 24 to 72 hours after injury, or until acute bleeding and capillary leakage have stopped.
- ↓ ms spasm, ↓ pain around joints before ROM ex.
THERMOTHERAPY

- 2nd phase of rehabilitation (subacute and chronic).
- \(\uparrow\) circulation and cellular metabolism.
- Analgesic & sedative effect.
- \(\downarrow\) Pain and muscle-guarding spasms.
- promote healing.
- In acute inflammatory stage;
- \(\uparrow\) hemorrhage & \(\uparrow\) edema.
## ADVANTAGES AND DISADVANTAGES OF USING HEAT OR COLD

<table>
<thead>
<tr>
<th>Advantages:</th>
<th>Disadvantages:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Decrease Pain</td>
<td>1. May aggravate swelling</td>
</tr>
<tr>
<td>2. Increase Tissue extensibility</td>
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<tr>
<td>3. Decrease Stiffness</td>
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### Heat

<table>
<thead>
<tr>
<th>Advantages:</th>
<th>Disadvantages:</th>
</tr>
</thead>
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<tr>
<td>1. May prevent further swelling</td>
<td>1. Increase stiffness</td>
</tr>
<tr>
<td>2. Decrease pain</td>
<td>2. Decrease tissue extensibility</td>
</tr>
</tbody>
</table>
# Indications and contraindications of both Heat and Cold Therapy

<table>
<thead>
<tr>
<th>Thermotherapy</th>
<th>Indications</th>
<th>Contraindications</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Painful conditions.</td>
<td>- Painful conditions.</td>
<td>- Acute inflammation.</td>
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<tr>
<td>- Muscle spasm.</td>
<td>- Muscle spasm.</td>
<td>- Acute infection.</td>
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<tr>
<td>- Acceleration of healing.</td>
<td>- Acceleration of healing.</td>
<td>- Open wounds.</td>
</tr>
<tr>
<td>- Sub-acute and chronic inflammation.</td>
<td>- Sub-acute and chronic inflammation.</td>
<td>- Impaired sensation.</td>
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<tr>
<td>- Prior to stretching and mobilization exercises.</td>
<td>- Prior to stretching and mobilization exercises.</td>
<td>- Impaired circulation.</td>
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<th>Contraindications</th>
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<tr>
<td>- Painful conditions.</td>
<td>- Painful conditions.</td>
<td>- Cold hypersensitivity</td>
</tr>
<tr>
<td>- Muscle spasm.</td>
<td>- Muscle spasm.</td>
<td>- Peripheral vascular disease</td>
</tr>
<tr>
<td>- Reduction of edema and joint effusion.</td>
<td>- Reduction of edema and joint effusion.</td>
<td>- Over a regenerating peripheral nerve</td>
</tr>
<tr>
<td>- Control of acute inflammation</td>
<td>- Control of acute inflammation</td>
<td>- Over an open wound</td>
</tr>
<tr>
<td>- Modification of spasticity</td>
<td>- Modification of spasticity</td>
<td></td>
</tr>
<tr>
<td>- Facilitation of motor control</td>
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</table>
FLUIDOTHERAPY
FLUIDOTHERAPY

Dry-heat modality that transfers heat energy by forced convection.

- Consists of cellulose particles circulated by hot air.
- Cellulose particles become suspended when the stream of air is forced through them.
- The fluidized particles demonstrate properties similar to those of liquids.
- Patients tolerate a much higher temperature than with either paraffin wax or moist heat.
Superficial heat therapy.

The viscosity of the air-fluidized system is low allowing a patient to submerge body parts into the fluidized bed and suspend these parts similarly to a fluid bath permitting exercise with relative ease.

Providing a strong massaging action, sensory stimulation, and levitation.
FLUIDOTHERAPY UNITS

✓ Comes in a variety of sizes and are best used for treating the distal extremities.

✓ The patient places the body part through the entrance sleeve of the Fluidotherapy unit.

✓ The sleeve is then secured to keep the cellulose particles from escaping.

✓ The treated body part feels as it is immersed in a moving liquid bath, such as a whirlpool.
PHYSIOLOGICAL EFFECTS OF FLUIDOTHERAPY

- General heating effects.
- Micromassage, levitation, and sensory stimulation.
- Exercise during treatment can help increase ROM.
- Temperature ranges are 38.8°C to 47.8°C.
- Lower ranges for patients who have greater tendency for edema formation.
- In beginning programs for desensitization.
Pt may not be able to tolerate higher temperatures.

Agitation can be controlled for patient comfort.

Patients can perform exercises while the affected body part(s) is within the cabinet.

Fluidotherapy may be of benefit clinically in:
- Increase soft tissue extensibility
- Reduce joint stiffness
ADVANTAGES OF FLUIDOTHERAPY

✓ Convenient and easy to apply.
✓ Temperature can be controlled.
✓ Agitation can be controlled for comfort.
✓ Variety of unit sizes allows for most body areas to be treated.
✓ Allows for exercise during intervention.
✓ Provides a dry, comfortable heat.
DISADVANTAGES OF FLUIDOTHERAPY

✓ Relatively expensive modality.
✓ Intolerance to the enclosed container.
✓ Intolerance to the dry materials used.

INDICATIONS

✓ Pain reduction
✓ Chronic inflammatory conditions.
✓ Post-fracture management
Reynaud's syndrome.

Desensitization.

CONTRAINDICATIONS

Symptomatic pain relief unless etiology is established.

Cancerous lesions.

Open wounds.

Serious infectious disease.
MUDS AND PELOIDS
Mud has been used for therapeutic purposes for thousands of years.

**TYPES OF MUD OR PELOIDS**

**MINERAL MUD OR FANGO:**
- Volcanic ashes found near lakes.
- Sulfur, iron, silicates and radioactive material.

**MINERAL SEA MUD:**
- Consists of remains of sea life.
- Found along the shores of waterways.
ORGANIC MOOR OR PEAT MUD:

✓ Decaying or decomposed vegetable matter as from roots, leaves.

✓ Found in a crude form and must be processed before being used for packs and baths.

THERAPEUTIC EFFECTS OF MUD

THERMAL EFFECT:

✓ Warm mud applications increase local metabolism.
**MECHANICAL EFFECT:**

✓ Pressure of mud on body surface and osmotic changes in the skin → softening and resolution of pathological products.

**CHEMICAL EFFECT:**

✓ Mineral effect from the minerals in the mud.

✓ Increased ions transfer and ions migration to the other pole.

✓ Depending on the ion;

✓ Zinc for fungi, Copper for allergy, Iodine for adhesions, and Magnesium for edema.
**PHYSIOLOGICAL EFFECT:**

- ↓ blood pressure, ↓ pulse rate, and ↑ internal body temperature.
- Relief of pain and muscle spasm.

**PSYCHOLOGICAL EFFECTS:**

- Direct contact and pressure ↓ anxiety and stress.
- Moist heat has a soothing and calming effect.

**INDICATIONS OF MUD**

- Chronic Inflammatory joint disease.
- Low back pain.
- Post-traumatic stiffness.
Diabetic peripheral Neuropathy.

Gout.

Fibrositis.

CONTRAINDICATIONS OF MUD

Acute inflammation.

Heart Disease.

Respiratory disease.

Wound infection.

Tuberculosis.

Cancer.

Sensitive skin.

Sensitive patients to pressure (claustrophobia).
DISADVANTAGES OF MUD THERAPY

- Difficulty in storing and in heating the mud.
- Difficulty in supplying the mud if the department is located in areas that are not producing the mud.
- Cross infection risks and not easy disposal of the mud.
THANK YOU