**Hot and Cold Therapy**

To promote repair and healing of tissues

**Cold Therapy**

Physiological Effects of Cold Therapy

**Systemic**
- Vasoconstriction
- Piloerection
- Shivering

**Local**
- Temperature sensitive nerve endings send signals to hypothalamus
- Local vasoconstriction
- Decreased capillary refill
- Decreased cellular metabolism

Therapeutic Effects of Cold
- Relaxes muscle
- Slows bacterial growth
- Decreases inflammation
- Decreases pain by numbing area
- Local anesthetic effect
- Decreases bleeding

Potential Complications of Cold Therapy
- When skin temp decreases below 59F, numbness sensation develops.
- Pain occurs if temp goes lower
- Vasoconstriction may be harmful to a pt with PVD - why? What can result?
- Tissue can freeze
- Signs of frostbite
  - White, waxy, mottled blue, pulseless skin
  - Skin hard to touch

Indications for Cold Therapy
- Acute traumatic injuries
  - Why?
- Systemic therapy for hyperthermia

Contraindications for Cold Therapy
- Pt shivering
- Edematous
- PVD
- Allergy, hypersensitivity to cold

Assessment Before Application of Cold Therapy

**Skin**
- Check for impaired circulation
- Neurosensory impairment
- Impaired mental status
- Open wounds

Skin Appearance with Cold Therapy
- Red first, then bluish – may have pallor
- Frostbite if therapy prolonged
20 minutes on, 20 minutes off
Prolonged exposure can cause reflex vasodilation
Consensual response
Cold Therapy Agents
Ice cap, ice collar, ice glove
Commercial ice pack
Hypothermia blanket

Heat Therapy
Physiological Effects of Heat Therapy
Systemic effects
Vasodilation
Local effects
Temperature sensitive nerve endings send impulses to hypothalamus – become aware of local temperature changes
Increased capillary permeability
Increased blood flow

Therapeutic Uses of Heat Therapy
Increases blood flow
Softens exudate
Decreases pain
Relaxes muscle
Psychological relaxation
Decreases muscle contractures
Improves joint ROM
Decreases joint stiffness

Suggest complications of heat therapy in the following situations
Temps above 113F?
Pts with CV disease?
Pts with existing inflammation?
Pts with edema?
Existing bleeding?
Very young and very old?

When will heat therapy be used?
Contraindications to Heat Therapy
First 24 hours traumatic injury
Active bleeding
Burns
Localized malignant tumor
Non-inflammatory edema
Skin disorders with redness or blisters
E.g. Psoriasis
Assessment Prior to Heat Therapy

- Skin appearance
  - Presence of abrasions, bruises, open areas, edema
- Record baseline
- Check VS
  - Especially important when applying heat to large body areas
- Peripheral pulses

Assessing Therapy

- Assess for signs of intolerance to therapy
- Vasodilation will result
  - Skin will become pink
- 20 minutes on, 20 minutes off
- Prolonged exposure can cause reflex vasoconstriction
- Body attempts to control heat loss
- Consensual response

Heat Therapy

- Hot water bottle
- Heating pad
- Aquatic pad (K pad)
- Irritants and counter-irritants
- Hyperthermia blankets
- Heat lamp or radiant warmer
- Commercial dry heat packs

Moist heat

- Moist warm compress
- Sitz bath 98-105F