Mechanical Agents:

Traction:

Effects:
- joint distraction
- reduce disc protrusion
- stretch soft tissue
- joint mobilization
- relax the muscles

Indications:
- herniation
- nerve root impingement
- joint hypomobility
- subacute/chronic inflammation
- muscle spasm

Contraindications:
- fracture
- Spinal Cord compressed
- post-surgery (acute)
- acute injury
- hypermobile or unstable joints (fracture, dislocation, pregnancy)
- peripherization of symptoms
- uncontrolled HTN (has known to increase BP)

Precautions:
- structural diseases of the spine (tumor, infection, RA, OA, steroid use)
- pressure of the belts (pregnant, hernia, vascular comprise, osteoporosis)
- displace annular fragment (once separated, traction will not help)
- medial disc protrusion (nerve root movement to the center by traction may compress it more)
- when pain resolves completely (complete nerve block)
- TMJ/Dentures (cervical traction)

Parameters:
- Lumbar:
  - Auto (if table slides = 1/3 of patient's weight; if it doesn't slide = 1/2 patient's weight) and patient's LE at 90/90 angle
  - By Therapist (patient is hook lying and pull on patient's lower legs) or (side-lying on a pillow while applying rotational force to spine by applying force at shoulder going backwards while stabilizing the pelvis)
  - By Patient (sitting self traction using chair or corner counters; use pull up bar; or side-lying on pillow)
- Cervical:
  - Auto (Start 10 to 15 pounds) Can progress to 7% of body weight
  - By Therapist Hand: (supine or sitting distraction the cranium gently)
**Mechanical:**

**Compression:**

**Effects of Compression Therapy (CT)**
- Increase pressure in tissues to exchange fluids between capillaries and tissues.
- improves venous and lymphatic return
- improves the effectiveness of muscle and joint pumps during activity
- prevents the re-accumulation of fluid and conserves the results of MLD
- helps break up scar tissue
- provides support of tissues that lost elasticity

**Indications:**
- Edema (lymphedema)
- Prevent DVT
- venous stasis ulcers (caused by poor circulation)
- residual limb shaping
- control hypertrophic scarring (decrease the height and vascularity of the scar tissue and increase its pliability)

**Contraindications:**
- Cardiac problems (increases demand on the heart)
- DVT or embolism
- obstructed vessels
- PAD or ulcers
- skin infection (increase in temp may promote growth)
- fracture
- arterial revascularization

**Precautions:**
- impaired sensation
- uncontrolled HTN
- metastatic cancer
- CVA (may limit blood to brain)
- superficial peripheral nerves (can injure nerves)

**Parameters:**
- Ask patent to remove jewelry
- Insure appropriate fit of sleeve
- Measure BP and Girth
- 3:1 ratio of on/off time
- Inflation 40 – 100 seconds / Deflation 10 – 35 seconds
- Pressure 30 – 80mmHg (do not exceed diastolic BP
- Time: 2 – 4 hours (2-3 x/day to 3x/wk.
- Measure Girth at end of treatment
# Mechanical: Massage

## Effects of Massage
- Stroking/Rubbing/Pressure

### Indications:
- Pain
- Decreased ROM
- Edema
- Trigger Point
- Adhesions
- Myositis
- Lactic Acid
- Migraine
- Muscle spasm
- Scar tissue
- Bursitis/Tendonitis
- Intermittent Claudication
- Raynaud’s Syndrome

### Contraindications:
- Infection
- Arteriosclerosis
- Thrombus
- Cellulitis
- Acute Injury
- Embolus
- Cancer

### Techniques - Parameters:

<table>
<thead>
<tr>
<th>Effleurage:</th>
<th>Friction:</th>
<th>Petrissage:</th>
<th>Tapotement:</th>
<th>Vibration:</th>
</tr>
</thead>
</table>
| - Light Rubbing
  - At start of Massage
  - For Relaxation | - Small circular motions
  - Trigger point or spasm
  - Deep
  - For edema/adhesions/Spasm | - Kneading
  - Adhesions
  - Lymphedema
  - Distal to Proximal | - Tapping
  - Cupping/slap
  - Enhance circulation | - Rapid shaking
  - Used for relaxation |

## LIGHT

### UV:
- Used and absorbed 1 – 2 mm into skin
- 3 types UV-A, UV-B, UV-C (different wavelengths)
- Used to treat skin disorders

### Effects of UV
- Facilitate healing
- Exfoliation
- Vitamin D
- Increase Pigmentation / Tanning
- Bactericidal effects
- Thickens Epidermis

### Indications:
- Acne
- Psoriasis
- Tetany
- Vitamin D Deficiency
- Chronic Ulcer/Wound
- Osteomalacia/Rickets
- Sinusitis

### Contraindications:
- Photosensitive meds
- Lupus
- Erythematous
- Tuberculosis
- Herpes Simplex
- Renal or Hepatic pathology
- Diabetes Mellitus
- Pellagra (diarrhea, dermatitis and dementia – Niacin (vitamin B-3) deficiency)

### Parameters:
- Determine Minimal Erythemal Dose (MED)
  - Piece of paper with 5 1-inch cut outs.
    - Lamp 15sec, 30sec, 45sec, 60sec, 75sec
  - 8-hours later: Look for MED
- Daily treatment using stopwatch to MED
- Increase daily as MED increases