Techniques Utilized in Rehabilitation

**Joint Mobilization**

“Joint Mobs”
- Manual therapy technique
- Used to modulate pain
- Used to increase ROM
- Used to treat joint dysfunctions that limit ROM by specifically addressing altered joint mechanics

Factors that may alter joint mechanics:
- Pain & Muscle guarding
- Joint hypomobility
- Joint effusion
- Contractures or adhesions in the joint capsules or supporting ligaments
- Malalignment or subluxation of bony surfaces

Should joint mobilizations be performed on someone who has a hypermobile joint?

**Mobilization** – passive joint movement for increasing ROM or decreasing pain
- Applied to joints & related soft tissues at varying speeds & amplitudes using physiologic or accessory motions
- Force is light enough that patient’s can stop the movement

**Manipulation** – passive joint movement for increasing joint mobility
- Incorporates a sudden, forceful thrust that is beyond the patient’s control

Self-Mobilization (Automobilization) – self-stretching techniques that specifically use joint traction or glides that direct the stretch force to the joint capsule

**Mobilization with Movement (MWM)** – concurrent application of a sustained accessory mobilization applied by a clinician & an active physiologic movement to end range applied by the patient
- Applied in a pain-free direction

**Terminology**

- **Physiologic Movements** – movements done voluntarily
  - Osteokinematics – motions of the bones

- **Accessory Movements** – movements within the joint & surrounding tissues that are necessary for normal ROM, but can not be voluntarily performed
  - Component motions – motions that accompany active motion, but are not under voluntary control
    - Ex: Upward rotation of scapula & rotation of clavicle that occur with shoulder flexion
  - Joint play – motions that occur within the joint
    - Determined by joint capsule’s laxity
    - Can be demonstrated passively, but not performed actively
**Terminology**

- **Arthrokinematics** – motions of bone surfaces within the joint
  - 5 motions - Roll, Slide, Spin, Compression, Distraction

- **Muscle energy** – use an active contraction of deep muscles that attach near the joint & whose line of pull can cause the desired accessory motion
  - Clinician stabilizes segment on which the distal aspect of the muscle attaches; command for an isometric contraction of the muscle is given, which causes the accessory movement of the joint

- **Thrust** – high-velocity, short-amplitude motion that the patient can not prevent
  - Performed at end of pathologic limit of the joint (snap adhesions, stimulate joint receptors)
  - Techniques that are beyond the scope of our practice!

- **Concave** – hollowed or rounded inward

- **Convex** – curved or rounded outward

**Relationship Between Physiological & Accessory Motion**

- **Biomechanics of joint motion**
  - **Physiological motion**
    - Result of concentric or eccentric active muscle contractions
    - Bones moving about an axis or through flexion, extension, abduction, adduction or rotation
  - **Accessory Motion**
    - Motion of articular surfaces relative to one another
    - Generally associated with physiological movement
    - Necessary for full range of physiological motion to occur
    - Ligament & joint capsule involvement in motion

- **Compression** –
  - Decrease in space between two joint surfaces
  - Adds stability to a joint
  - Normal reaction of a joint to muscle contraction

- **Distraction** –
  - Two surfaces are pulled apart
  - Often used in combination with joint mobilizations to increase stretch of capsule.

**Effects of Joint Mobilization**

- **Neurophysiological effects** –
  - Stimulates mechanoreceptors to pain
  - Affect muscle spasm & muscle guarding – receptive stimulation
  - Increase in awareness of position & motion because of afferent nerve impulses

- **Nutritional effects** –
  - Distraction or small gliding movements – cause synovial fluid movement
  - Movement can improve nutrient exchange due to joint swelling & immobilization

- **Mechanical effects** –
  - Improve mobility of hypomobile joints (adhesions & thickened CT from immobilization – loose)
  - Maintains extensibility & tensile strength of articular tissues

- **Cracking noise may sometimes occur**

**Contraindications for Mobilization**

- **Should not be used haphazardly**

- **Avoid the following:**
  - Inflammatory arthritis
  - Malignancy
  - Tuberculosis
  - Osteoporosis
  - Ligamentous rupture
  - Herniated disks with nerve compression
  - Bone disease

- **Neurological involvement**
- Bone fracture
- Congenital bone deformities
- Vascular disorders
- Joint effusion
  - May use I & II mobilizations to relieve pain
Precautions

- Osteoarthritis
- Pregnancy
- Flu
- Total joint replacement
- Severe scoliosis
- Poor general health
- Patient’s inability to relax

Maitland Joint Mobilization Grading Scale

- Grading based on amplitude of movement & where within available ROM the force is applied.
- Grade I
  - Small amplitude rhythmic oscillating movement at the beginning of range of movement
  - Manage pain and spasm
- Grade II
  - Large amplitude rhythmic oscillating movement within midrange of movement
  - Manage pain and spasm
- Grades I & II – often used before & after treatment with grades III & IV

Indications for Mobilization

- Grades I and II - primarily used for pain
  - Pain must be treated prior to stiffness
  - Painful conditions can be treated daily
  - Small amplitude oscillations stimulate mechanoreceptors - limit pain perception
- Grades III and IV - primarily used to increase motion

Joint Positions

- Resting position
  - Maximum joint play - position in which joint capsule and ligaments are most relaxed
  - Evaluation and treatment position utilized with hypomobile joints
- Loose-packed position
  - Articulating surfaces are maximally separated
  - Joint will exhibit greatest amount of joint play
  - Position used for both traction and joint mobilization
- Close-packed position
  - Joint surfaces are in maximal contact to each other
- General rule: Extremes of joint motion are close-packed, & midrange positions are loose-packed.