Musculoskeletal Assessment
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Musculoskeletal: Review
Anatomy & Physiology
• Skeleton: 206 bones
• Long: femur, humerus, radius
• Short: carpals, tarsals
• Irregular: vertebrae
• Bones protect, support, allow for locomotion and mineral storage (Ca,Mg)

Structure and Function (cont.)
Components of musculoskeletal system
• Nonsynovial or synovial joints
• Muscles
• Temporomandibular joint
• Spine
• Shoulder
• Elbow
• Wrist and Carpals
• Hip
• Knee
• Ankle and Foot

Musculoskeletal
• Joints: Range from joints that don’t move to joints that freely move.
• Ligaments and tendons: stabilize joints
• Ligaments: attached from bone to bone
• Tendons: attached from muscle to bone
• Cartilage: ends on bones
Musculoskeletal

- Muscles: controlled by nervous system
- Fascia: surrounds muscles, divides muscles, main blood vessels and nerves.
- Bursae: cushions moving parts
- Muscle tone: ability to resist force; graded 0-5
- Atrophy: decrease size

Assessing: Subjective Data

- Joint pain:
- SLIDA: Severity, Location, Intensity, Duration, Aggravating factors (alleviating factors, associated symptoms)
- Stiffness
- Limited movement

Assessing: Subjective Data

- Rheumatoid Arthritis (RA) chronic systemic inflammatory disease involves symmetric joints. Other MS disorders involve isolated or unilateral joints.
- Rheumatoid arthritis
- Stiffness
- Swelling
- Limited ROM
- Movement decreases pain
Assessing: Subjective Data

- **Osteoarthritis**: chronic degeneration of joint cartilage caused by aging or trauma
- Stiffness
- Swelling
- Limited ROM
- Heberden’s and Bouchard’s nodules

Assessing: Subjective Data

- **Muscle Pain**:
  - SLIDA
  - Aching/cramps
  - Weakness
  - Resistance 0-5
  - Atrophy

Assessing: Subjective Data

- **Bones pain**:
  - SLIDA
  - Hx
  - Deformity
  - Trauma- limitations as a result of trauma

Assessing: Subjective Data

- **Functional Assessment**:
  - ADL’s- does MS problem create limits:
  - Bathing- getting in and out of tub, turning faucets
  - Toileting- getting on/off toilet, wiping self
  - Dressing- buttons, zippers, tying shoes
  - Grooming- shaving, brushing teeth, putting on makeup
  - Eating- cutting food, preparing meals etc…

Assessing: Subjective Data

- **Self care behaviors**:
  - Exercise- type, frequency, warm up
  - Pain during exercise? How tx?
  - Recent weight gain (puts stress on musculoskeletal system) …usual daily diet
  - Any meds- anti inflammatory, muscle relaxants, pain relievers
Assessing: Subjective Data

- Additional hx. - Infants and Children:
  - Birth trauma
  - Resuscitation at birth
  - Motor milestones
  - Bone deformity/spinal curvature

- Additional hx. - Adolescents:
  - Sports (Assess safety)
  - Special equipment? Training? Warm up?
  - What does client do if injured/ill
  - How does sport fit in with other demands/activities

- Additional hx. - Aging adult:
  - Use functional assessment to elicit any loss of function, self care deficit or safety risk:
    - Weakness
    - Falls/ Stumbling
    - Mobility aids used

Assessing: Objective Data

- Physical exam provides the nurse with objective data
- Guidelines for Physical Exam include:
  - Full visualization of part being examined
  - Drape other parts for privacy
  - Orderly approach: head to toe and proximal to distal.

Physical Examination Guidelines

- Joint being examined should be supported.
- Compare paired joints, expect symmetry.
- When examining a painful area, use firm support, gentle movement.
- Assess Range of Motion (ROM) of each joint

Physical Examination

- Assess gross motor movement and posture
- Note patient’s gait
- Note any foot dragging, limping, shuffling
- Note any spinal deformities
- Inspect skin and subcutaneous tissues
Physical Examination

• Assess upper and lower extremities for:
  • Overall size, symmetry
  • Gross deformity
  • Bony enlargement
  • Alignment
  • Symmetry of length and position

Physical Examination

• Bones, joints, muscles:
  • Inspect swelling, deformity, condition
  • Assess for stiffness, instability, pain, crepitus, unusual joint movement
  • Assess ROM
  • Muscle strength
  • Assess symmetry

Physical Examination

• Head
  • Temporomandibular Joint- crepitus and pain with TMJ disorder
  • Open mouth: 3-6 cm
  • Move lower jaw from side to side
  • Stick out lower jaw

Physical Examination

• Neck:
  • ROM and muscle strength:
  • Flexion- touch chin to chest
  • Extension- tilt head backward
  • Cervical rotation- turn head to R and L.
  • Lateral bending- touch ear to R. and L. shoulders
  • Retraction and Protraction

Physical Examination

• Shoulder: Note posture erect, hunched.
  • Assess symmetry and position of clavicles.
  • Palpate clavicles toward shoulders, palpate deltoid muscle.
  • ROM and muscle strength:
  • Flexion and Extension and Hyperextension
  • Abduction and Adduction
  • Rotation

Elbow Anatomy
(Right Anterior View)
Physical Examination

**Elbow**: Bend elbow 70 degrees, inspect and palpate posterior surface

- Note: medial and lateral condyles of humerus and olecranon process of ulna

- ROM and muscle strength:
  - Flexion and Extension
  - Supination and Pronation

Bones of Hand

- **Wrist**: Grasp wrists, assess body processes of radius (thumb side) and the ulna. Palpate radiocarpal joint and remaining wrist joints.
- ROM and muscle strength:
  - Flexion and Extension and Hyperextension
  - Radial and ulnar wrist deviation
  - Circumduction

Hand Bones and Joints

- **Hand**: Use thumb and forefinger to palpate the metacarpophalangeal and interphalangeal joints.
- ROM and muscle strength:
  - Flexion and Extension and Hyperextension
  - Abduction: have patient spread fingers apart
  - Adduction: have pt. hold fingers together.
  - Thumb/Finger Opposition

Phalen’s test
Figure 7-37. Arthritis: Heberdens nodules & Bouchards nodules

Figure 7-39. Anatomy of the Hip

Physical Examination

- **Hip** - palpate hip joint and surrounding structures. Position pt. side lying and palpate iliac crest, greater trochanter, hip, thigh and buttock muscles
- ROM and muscle strength:
  - Flexion and Extension and Hyperextension
  - Adduction and Abduction
  - External rotation and Internal rotation

Landmarks of Knee

Physical Examination

- **Knee** - have pt. sitting, dangling. Inspect-note alignment, deformity, contour of quadricep muscle.
- Palpate the suprapatellar pouch and note any tenderness, edema.
- ROM and muscle strength:
  - Flexion and Extension
**Physical Examination**

- **Ankle:** Compare the contour of R. and L. ankles. Palpate ankle and achilles tendons.
- **ROM and muscle strength:**
  - Dorsiflexion - point toes upward.
  - Plantar Flexion - point toes downward.
  - Inversion - turn soles of feet inward.
  - Eversion - turn soles of feet outward.
  - Circumduction

- **Foot:**
  - Inspect skin integrity, condition of nails and any deformities.
  - Palpate the metatarsal bones and joints, squeeze each foot.
  - **ROM and muscle strength:**
    - Flexion and Extension
    - Abduction and Adduction
Landmarks of the Spine

Physical Examination

- **Spine**: Have pt. bend a waist, note curvature, ease of mobility.
- Palpate vertebral column with fingertips, note tenderness or bony deformities.
- Lightly fist palpate length of spine (ulnar surface of hand) Note any tenderness.
- Lateral bending and spinal rotation.

Summary Musculoskeletal Exam

- Inspect body parts
- Palpate each joint
- Assess ROM of each joint
- Assess muscle strength

Sample Charting