Mastering Your Musculoskeletal Exam

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Disclosure

I have no current affiliation or financial interest with any grantor or commercial interests that may have direct interest in the subject matter of the CE Program.
Here’s what we’ll cover

• Review key components of a comprehensive musculoskeletal exam
• Describe an organized approach to exam techniques
• Identify history questions used to assess patients presenting with problems for the upper and lower extremity
• Identify functional anatomy with clinical significance
• Discuss pharmacologic and non-pharmacologic treatment options for common musculoskeletal conditions
Preparing for a Comprehensive MSK Workshop

So many topics to cover!
I smile to hide how completely overwhelmed I am.
MSK Exam and Primary Care

Musculoskeletal problems are in the top reasons for PCP visits

Over half of chronic medical conditions in the U.S. are related to MSK diagnoses
Components of MSK Exam

• Observation
• Palpation
• Active & Passive range of motion (ROM)
• Strength
• Reflexes and Sensation
• Gait
Helpful Terms

- Abduction
- Adduction
- Proximal
- Distal
- Origin

- Insertion
- Volar
- Dorsal
- Valgus
- Varus
Observation

- Skin appearance-breakdown, color, scar
- Swelling, edema, erythema
- Symmetry or asymmetry
- Posture
- Patient affect
Pressure level: light prior to firm

Identify location: tendon attachment, muscle, joint?

Type of pain provoked

Focal vs. radiating pain
Range of Motion
Range of Motion

• Passive vs. Active
• Types of joints
• Is range limited due to pain/guarding, weakness, or muscle/joint issue?
• Always check the unaffected side first for comparison
• Is there pain associated with the reduced range of motion?
American Spinal Injury Association Strength Grading

0  Total paralysis
1  Palpable or visible contraction
2  Active Movement
3  Active movement against gravity
4  Active movement against gravity with some degree of resistance
5  Active movement with full resistance (normal)
Reflex Grading

0  No response
1+  Slight by definite response (may or may not be normal)
2+  Brisk response (normal)
3+  Very brisk (may or may not be normal)
4+  Repeating response/clonus (always abnormal)
Dermatome Review!
Type of Pain

- Somatic
- Neurogenic
Consistent Physical Exam!

ROM & Strength  Focused Area(s)  Special Tests
Make friends with a physical therapist!
Shoulder Anatomy

3 Bones
• scapula
• clavicle
• humerus

Rotator cuff muscles (SITS)
• Supraspinatus
• Infraspinatus
• Teres Minor
• Subscapularis
Shoulder

• Very mobile joint with shallow glenoid fossa
• Stability depends on muscles and connective tissue
• Assess posture!
• Inspection, palpation, muscle testing, special tests
Special Shoulder Tests

- Impingement signs: Neer, Hawkins, Empty Can
- Cross body adduction
- Apprehension sign
- Drop arm test
- Wall push-up
Shoulder Diagnostic Testing

Will the test change your treatment plan?

- X-ray
- MRI
- EMG (especially if numbness/tingling, weakness)
- Consider visceral causes (e.g. cardiac, gallbladder, etc)
- Always assess for cervical spine symptoms
Shoulder Case Study

- History of intermittent impingement syndrome
- Patient enjoys cycling, fell while on a summer ride
- Began physical therapy ~1 month after symptoms began
- MRI completed due to lack of progress ➔ RTC tear
- Surgery completed in January, started post-op rehab when cleared by surgeon
Common Shoulder Diagnoses

• Impingement syndrome- also referred to as separate diagnoses of bursitis, rotator cuff tendinosis
• Osteoarthritis (glenohumeral and/or acromioclavicular joint)
• Biceps tendinosis (tendon rupture less common)
• Rotator Cuff Tear (partial or complete)
“Universal” Conservative Treatment

• NSAIDs- oral and/or topical
• Ice/HEAT
• Physical Therapy
• Home Exercises
• Cortisone injection
• Refer if significant weakness of RC or lack of progress with 2-3 months of rehab
Elbow

• Hinge joint
• Stable with firm bone support
• Joint articulations include the humerus, radius, and ulna
• Special tests: Resisted supination/pronation, resisted middle finger, Resisted wrist extension/flexion, Tinel at the ulnar groove
Common Elbow Diagnoses

- Lateral-Tennis Elbow
  - Tendonitis of extensor carpi radialis brevis
  - extensor – supinator group
- Medial Golf Elbow
  - flexor – pronator group
- Bursitis
- Cubital tunnel syndrome (ulnar neuropathy)
- Fracture of radial head
- Osteoarthritis of elbow
- Radial tunnel syndrome (posterior interosseous nerve)
- Triceps tendinosis
Wrist/Hand

- Bilateral comparison to look for asymmetry
- Inspect for atrophy, joint swelling, triggering of finger
- Special Tests: Tinel (wrist AND elbow), Phalen, Median nerve compression, Finkelstein, CMC grind
- Include exam of shoulder and elbow to determine etiology (e.g. cervical radiculopathy vs. carpal tunnel syndrome)
Common Wrist/Hand Diagnoses

• Carpal tunnel syndrome
• Osteoarthritis (especially CMC joint)
• DeQuervain’s Tenosynovitis (“texting thumb”)
  • Ice, thumb spica splint, injection, avoid aggravating activity
• Ganglion cyst
• Trigger Finger
• Dupuytren’s contracture
Trigger Finger

• Snapping or triggering at the MCP (A1 pulley)
  - Tender, swollen nodule at the A1 pulley
  - Often history of repetitive grasping or pinching
    - Triggering transmitted to DIP, locking
• NSAIDs, injection, mixed results with splinting
• Often requires surgical release if persistent
Carpal Tunnel Syndrome Treatment

• Splinting (nighttime)
• Injection – can be diagnostic and used prior to surgery
• Surgical intervention for median nerve release
  • EMG can assess severity
  • Refer patient for consult if symptoms are progressive and/or if exam shows weakness, sensory changes
“Universal” Conservative Treatment

- NSAIDs- oral and/or topical
- Ice/HEAT
- Physical Therapy and Home Exercises
- Cortisone injection
- PRP and newer therapies (?)

Refer if significant weakness, neurologic findings, or lack of progress with 2-3 months of rehab
Lower Limb
Hip

Pelvic Girdle: 3 joints
  Hip joint
  Sacroiliac joint
  Pubic symphysis
Diagnosing Hip Pain: Often Challenging

Common Chief Complaints

- BACK PAIN
- GLUTEAL PAIN
- LATERAL HIP PAIN
- ANTERIOR HIP PAIN
- GROIN PAIN
- LEG PAIN OR TINGLING
- SCIATICA
- WEAKNESS
- GAIT DIFFICULTY
- SPASM
Diagnostic Testing

Will the test change your treatment plan?

• X-ray
• MRI
• EMG (especially if numbness/tingling, weakness)
  • http://www.abemexam.org/Verify-Certification/ABEM-Directory
• Consider visceral causes
• Always assess for lumbar spine symptoms
Observation example: Different approaches for hip replacement incisions
Hip

• Key point: Identify if pain is from hip joint, a surrounding area, or lumbar spine
• Assess anterior, lateral, and posterior hip
• Good lumbar spine exam
• Special tests: Stinchfield (resisted flexion with extended knee), Faber, Gaenslon, Ober
Common Hip Diagnoses

- Osteoarthritis
- Trochanteric bursitis (Greater trochanteric pain syndrome)
- Hip flexor tendinosis, Psoas tendinosis
- Sacroiliac Joint Dysfunction/Pain
- Piriformis Syndrome
- Meralgia Paresthetica
- Lumbar Spine etiology
Meralgia Paresthetica
Trochanteric Pain Syndrome

Key Point: Often a secondary issue/symptom of gluteal weakness, gait abnormality, and/or iliotibial band syndrome
Piriformis Syndrome
Trendelenburg Sign

Testing the STANDING leg

Dropping the opposite side indicates gluteal weakness

+ For Right gluteal weakness
Knee

- Largest joint in the body
- Modified hinge joint
- Greatest range of motion is flexion
- More exposed joint, therefore higher risk of injury
- Is pain intra-articular or extra-articular?

- Meniscal tear testing (McMurray, Apley)
- Ligament stability testing:
  - Anterior and posterior cruciate ligaments (Anterior & Posterior Drawer, Lachman)
  - Medial and lateral collateral ligaments (Varus/Valgus test)
Knee X-ray Views: Include Weight Bearing & Sunrise View
Common Knee Diagnoses

- Osteoarthritis
- Effusion (secondary to trauma or OA)
- Tendinosis: Patellar, Quadriceps
- Pes Anserine Bursitis
- Iliotibial band syndrome
- Patellofemoral syndrome (aka “runner’s knee”)
- Ligament strain or tear
- Meniscal tear
Managing knee pain can be integral for patient quality of life!
Peroneal Neuropathy
Knee Treatment

- P.R.I.C.E.
- NSAID
- Hinged Brace (OA)
- Physical Therapy
- Aspiration, Injection
Foot/Ankle

- Foot and ankle are focal points of support for the body to weight bear and ambulate
- Heel and toe pads act as shock absorbers for walking and activity
- Complex joints allow for balance on variable terrain
- Morton’s Neuroma: Squeeze test- usually between 3rd and 4th metatarsal heads
Common Foot & Ankle Diagnoses

- Achilles Tendinosis (complete rupture less common)
- Gastroc strain
- Peroneal and Posterior Tibial tendinosis
- Ankle Sprain- ATF, CF, PTF
- Anterior Tibial Stress Syndrome (Shin splints)
- Plantar Fasciitis
- Morton’s Neuroma
- Metatarsalgia
- Hallux Valgus
- Pes Planus
Foot and Ankle

- Include inspection of shoes
- Sensation
- Proprioception
- Arches

Deformed Joint

Pes Planus

Charcot Joint
Injury may affect all 3! ATF, PTF, CFL  
(CFL least common)
Plantar fasciitis

Tenderness over the medial tuberosity of the calcaneus, tightness with dorsiflexion

Assess for gastric tightness, arches
Metatarsalgia & Morton’s Neuroma
Foot Fractures

- May occur with low impact/no trauma
- Assess for swelling
- Key: Pain with percussion?
- Think about osteoporosis
“Universal” Conservative Treatment

- NSAIDs- oral and/or topical
- Ice/HEAT
- Physical Therapy and Home Exercises
- Cortisone injection
- PRP and newer therapies (?)
- Refer if significant weakness, neurologic findings, or lack of progress with 2-3 months of rehab
SHOULDER EXAM: No atrophy. Normal strength of rotator cuff and shoulder girdle. Special tests are negative.

Range of Motion: Pain with Internal Rotation, External Rotation, Abduction. Painful arc of motion 80-120 degrees (supraspinatus/impingement).

Special Tests: Positive impingement testing.

ELBOW EXAM: No atrophy, no effusion, redness or warmth. ROM is pain-free and within functional limits, normal strength.

Inspection/Palpation:
Tenderness at: lateral epicondyle.

Special Tests: Positive resisted middle finger extension, resisted supination.

WRIST/HAND EXAM: No swelling, redness or warmth. No skin breakdown or nail abnormalities. No palmar or dorsal atrophy. Range of motion is pain free and within functional limits, normal strength.

Inspection: thenar atrophy.

Special Tests: Positive Phalen's, Tinel's, Median nerve compression.

HIP EXAM: No atrophy. Inspection/Palpation:
Tenderness at: trochanteric bursa, piriformis, SI joint.

Special Tests: Negative FABER's, Stinchfield's (resisted hip flexion).

KNEE EXAM: No atrophy, no effusion, redness or warmth. ROM is pain-free and within functional limits, normal strength. Good ligamentous stability.

ANKLE/FOOT EXAM: No swelling, redness or warmth. No skin breakdown or gross deformity. No atrophy. Range of motion is pain free and within functional limits, normal strength. Special tests are negative.
Thorough Exam

PT/OT

Modify Activity

NSAID/Ice/Injection
Challenge Yourself, Practice These Skills, & Achieve Confidence with MSK Issues!

✓ Functional Anatomy
✓ Good Exam
✓ Partner with the Patient
✓ Reassess
References


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