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Management of Acute Joint Dislocations

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- We have no professional or financial affiliations or conflicts of interest that would bias this work.

Agenda & Learning Outcomes

1

Understand common mechanisms for different joint dislocations

2

Describe priorities of care in managing acute joint dislocations.

3

Discuss techniques to safely reduce finger & shoulder dislocations

4

Practice safe and effective management of common dislocations

Joint Dislocations & Subluxations

- **Dislocation** = complete displacement of a bone from its normal joint position

- **Subluxation** = partial or transient displacement of a bone from its normal position

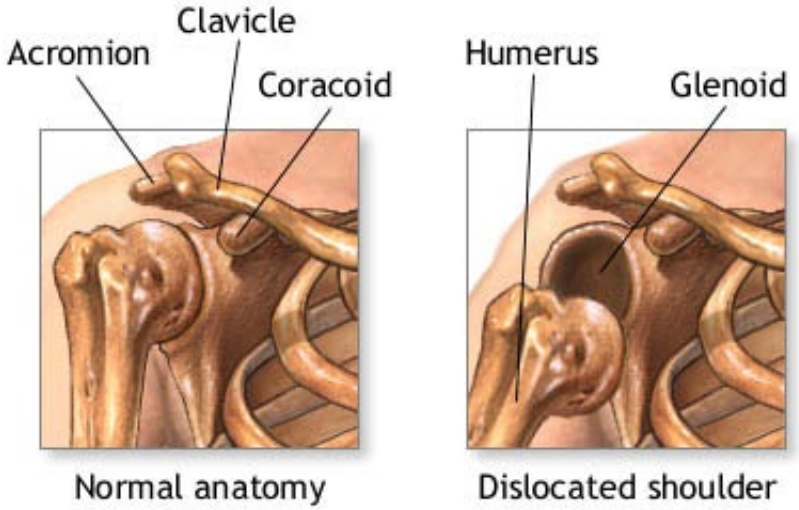
Rozzi et al., 2018

Dislocations of Specific Joints

Shoulder Dislocations (Glenohumeral joint)

- Most commonly dislocated major joint
  - 97% occur anteriorly (Zacchilli & Owens, 2010)
- Early onsite reduction before spasm/guarding
- High recurrence rate
- First-time dislocation should have imaging

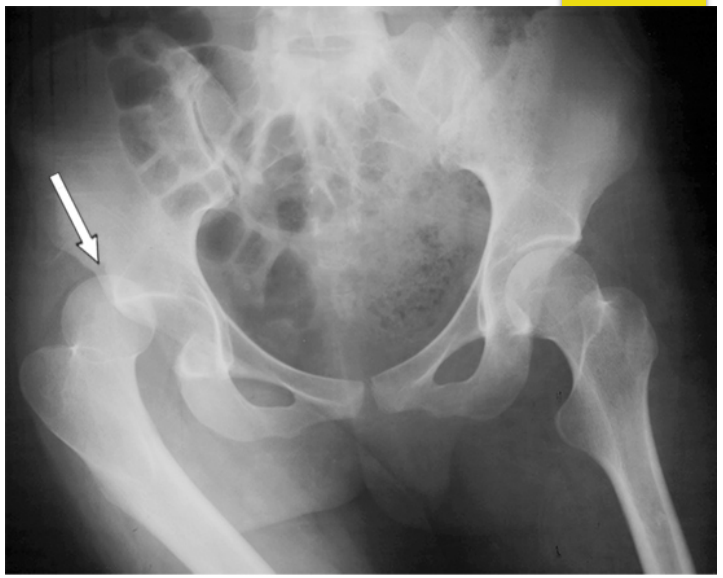
Rozzi et al., 2018



Hip Dislocations (Femoroacetabular joint)

- Rare in athletics
- Posterior is most common
- Often involves additional intra-articular injury (e.g., labral tears, chondral defects)
- Risk for AVN

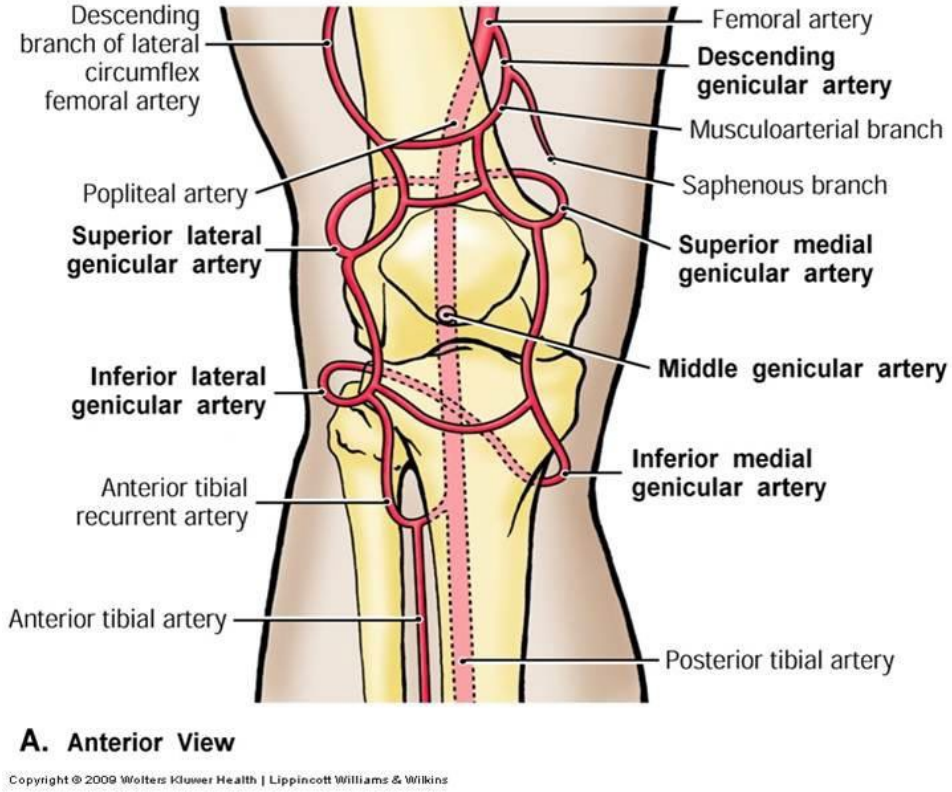
Rozzi et al., 2018



Knee Dislocations (Tibiofemoral joint)

- Highly traumatic injury
  - Multiple-ligament injury
  - Risk for neurovascular compromise
- May spontaneously reduce
  - Immobilize and transport

Rozzi et al., 2018



Patellar Dislocations (Patellofemoral joint)

- Almost always lateral
- First-time dislocator at risk for osteochondral Fx
- High recurrence rate
- Reduction can be spontaneous, or achieved through quad activation or manual reduction

Rozzi et al., 2018

Elbow Dislocations (Humeroulnar joint)

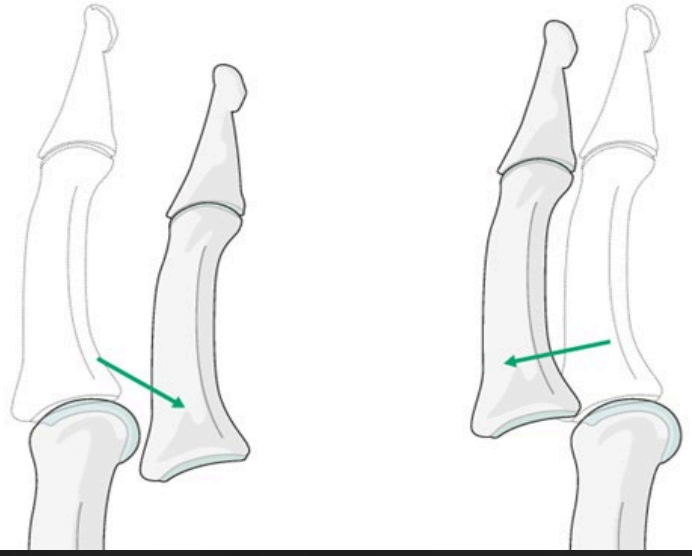
- Most often posterior or posterolateral
- Risk for neurovascular compromise

Rozzi et al., 2018

Finger Dislocations

- MCP joints
  - 1st MCP is most common
  - Can occur in a dorsal or volar direction
- IP joints
  - PIP dislocations are very common (usually dorsal)
  - Do not reduce if Fx is suspected

Finger dislocations "should be urgently reduced" to improve patient outcomes and reduce morbidity (Hoyt & Ramirez, 2017)



Management of Acute Dislocations

Care for Acute Dislocations

(NATA Position Statement: Rozzi et al., 2018)

- Must comply with state practice act and physician standing orders
- **Tx priorities:**
  1. Avoid neurovascular complications
  2. Reduce the joint as atraumatically as possible
- **Key points:**
  - r/o Fx
  - Get consent
  - Assess neurovascular function before and after
  - Immobilize after reducing
  - Document all care provided

Benefits of early on-site reduction

- Easier to reduce compared to waiting (spasm)
- Reduced pain/improved patient comfort
- Can restore blood flow
- Relocation rate is higher with prompt reduction
- Improved joint integrity
- Improved functional prognosis
- Decreased cost (ER visit)
- Decreased psychological trauma

(Rozzi et al., 2018; Wright, Brandon, & Reisman, 2020)

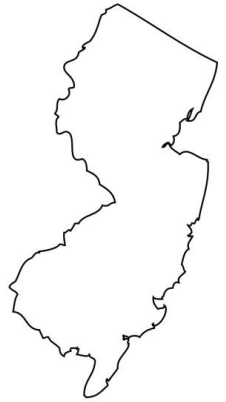
When NOT to reduce

- Signs of fracture
- Severe pain
- Concomitant injury (e.g., laceration or tendon rupture)
- Children with risk of epiphyseal injury (radiographs needed before reducing)
- Joints that you are not comfortable/experienced/trained to reduce

(Wright, Brandon, & Reisman, 2020)

NJ Practice Act & Standing Orders

- "Athletic training shall also include the application of physical treatment modalities to athletes under a plan of care designed and overseen by a physician licensed in this State, as recommended by the advisory committee and defined in regulations by the board" (NJ Athletic Training Licensure Act)
  - No specific language regarding joint reduction
- Only about 1/3 of ATs have written standing orders that specifically address joint dislocations (Wright & Diede, 2021)



Dislocation Training

- Joint dislocations require prompt onsite reduction to restore function and reduce the risk of NV complications (Rozzi et al., 2018)
- 90% of ATs have reduced dislocations, but only 46.5% received training in their AT programs (Wright & Diede, 2021)
  - Training and simulation practice can improve reduction techniques in a safe, controlled environment
- Practicing ATs had only a 9.6% success rate in emergency management simulation based on current CAATE 2020 Standards, demonstrating a knowledge gap and need for post-professional simulation training (Arduini & Volberding, 2024)

Dislocation Training Results

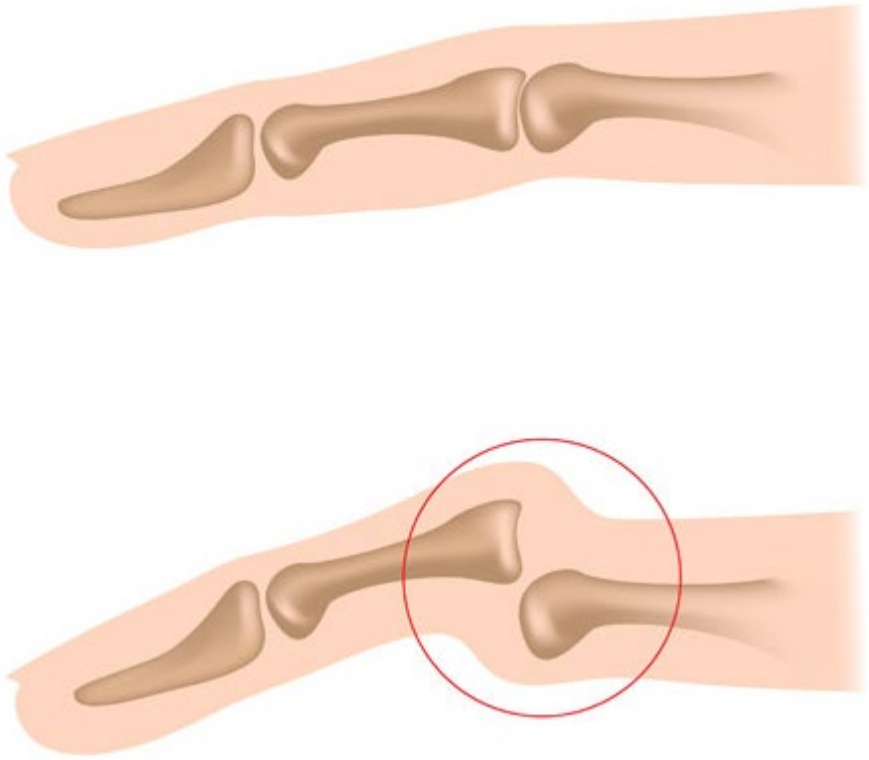
- Shoulder
  - Practice with dislocation simulators led to improved reduction rate and decreased time to reduction (Lefebvre et al., 2025)
- PIP joint
  - 81% of participants found dislocation simulator to be realistic, and 100% agreed that using the model improved their competency in this skill (Lord, Geary, & Lord, 2023)

Common Reduction Techniques

Workshop Topics

1. **Finger reduction**
   - PIP, DIP, MCP
2. **Glenohumeral joint reduction**
   - External rotation technique
   - FARES technique
3. **Ankle dislocation immobilization**
   - Vacuum splint

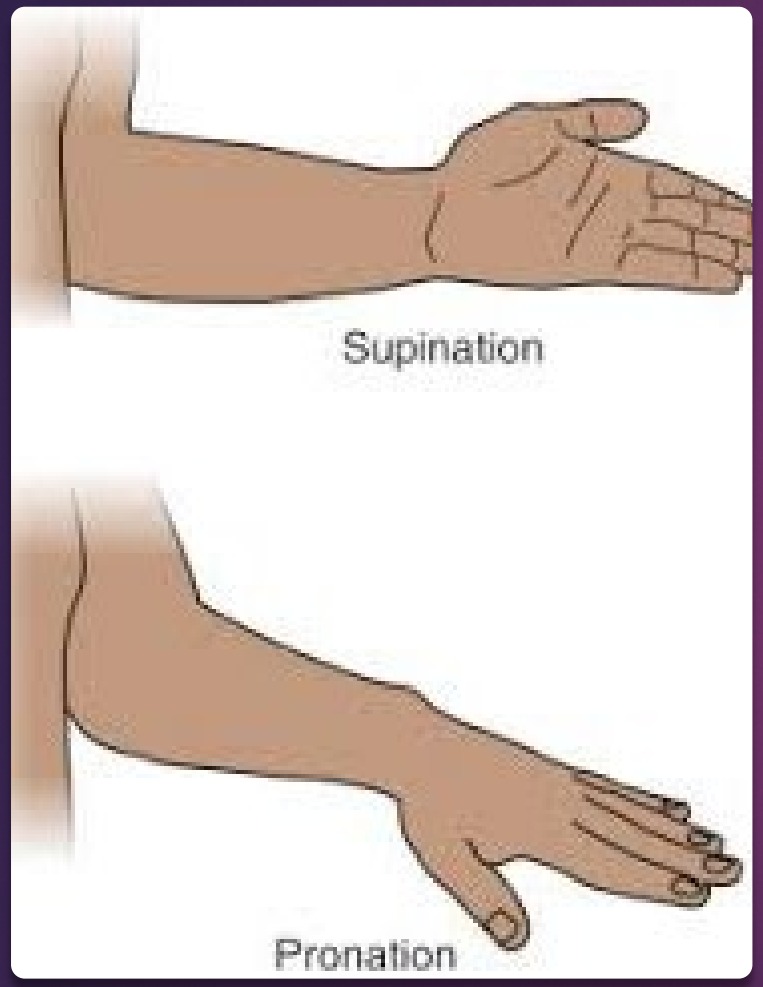
PIP Joint Dislocation



(Taqi & Collins, 2024)

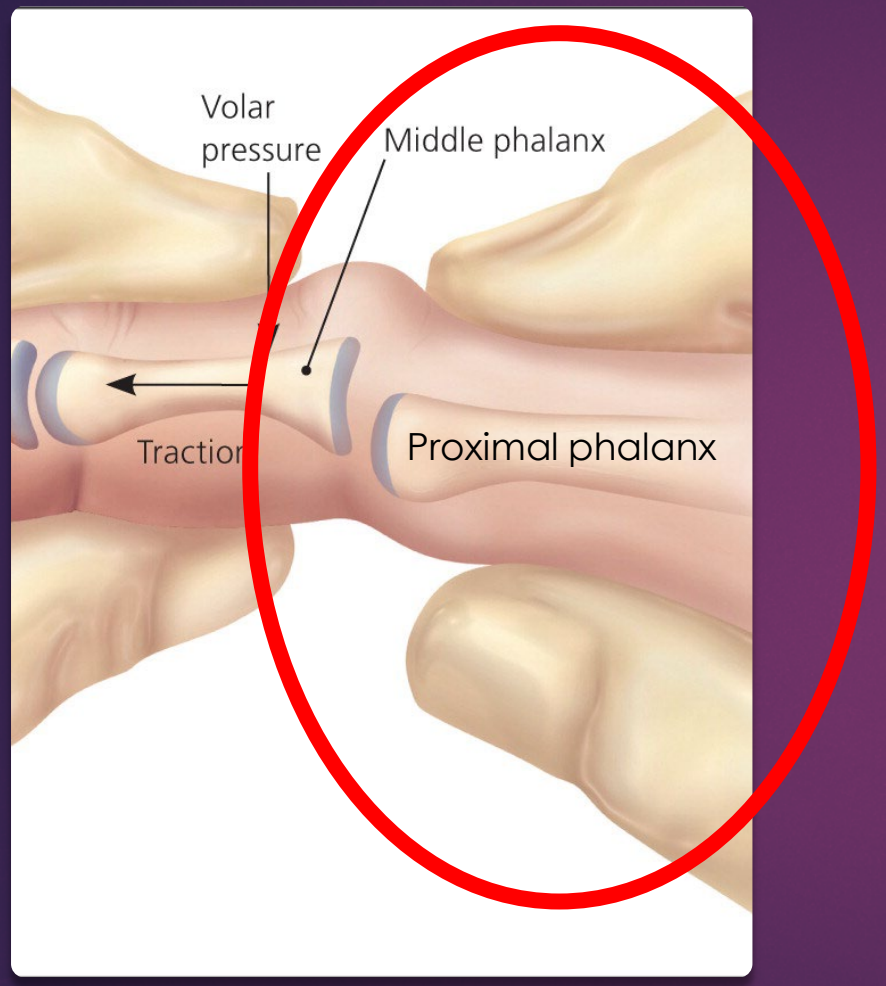
Step 1.
Palpate the deformity to identify direction

(Taqi & Collins, 2024)



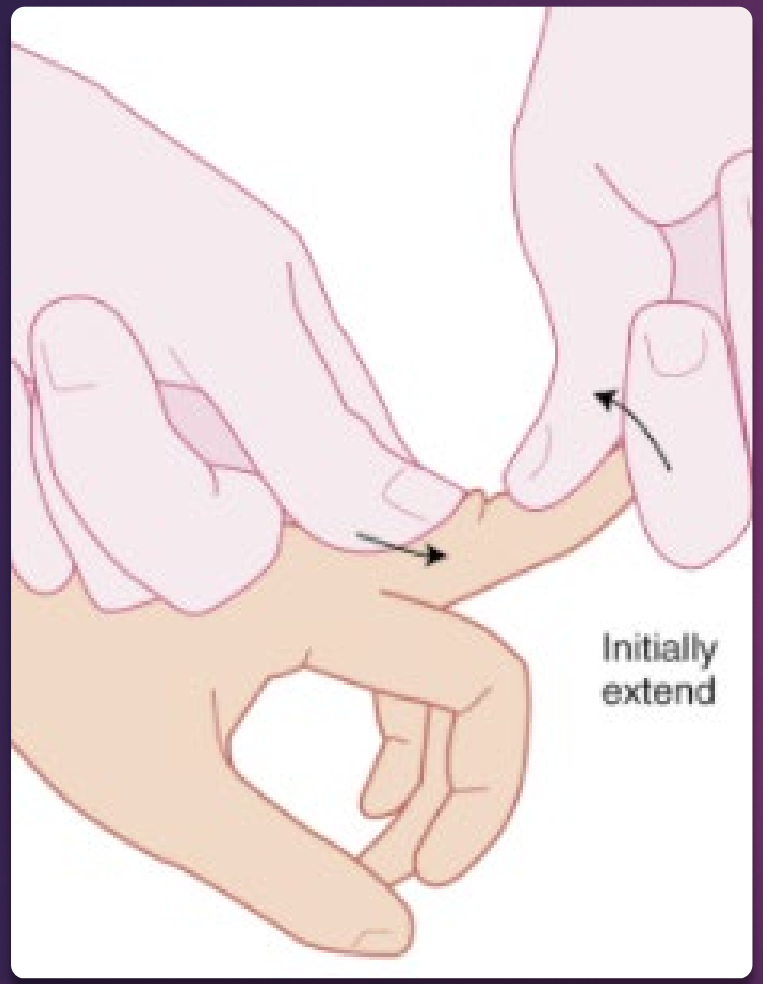
Step 2.
Place hand in prone position

(Taqi & Collins, 2024)



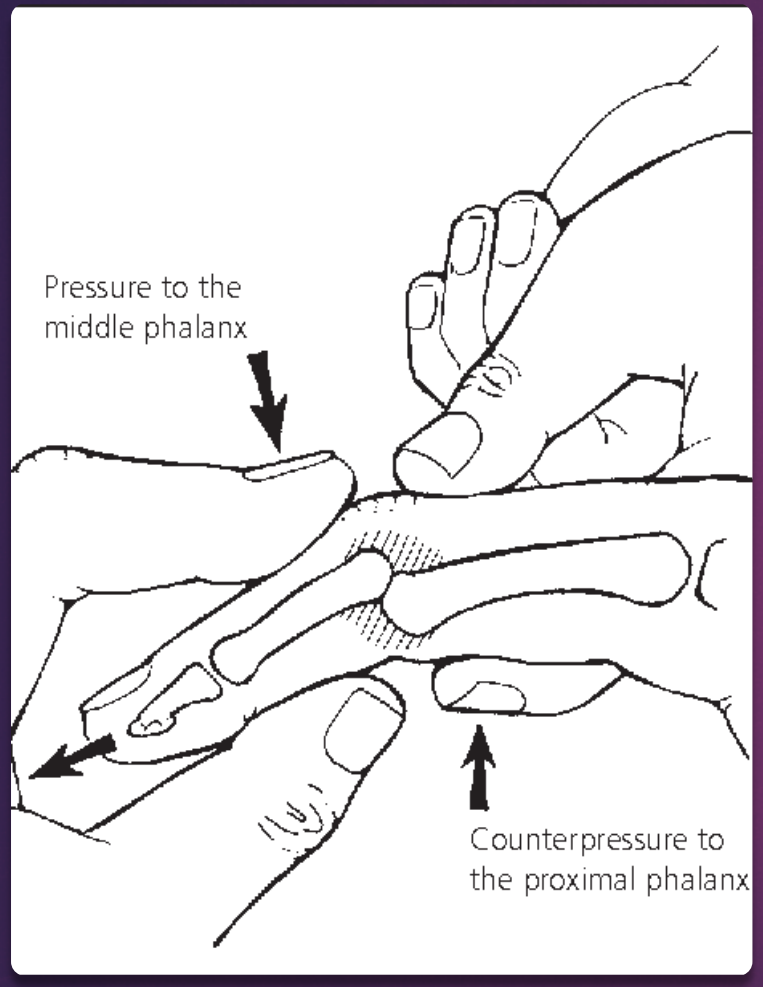
Step 3.
Stabilize joint (proximal phalanx)

(Taqi & Collins, 2024)



Step 4.
Extend PIP joint (exaggerate dislocation)

(Taqi & Collins, 2024)



Step 5. Apply traction/ countertraction force

(Taqi & Collins, 2024)

Glenohumeral Joint Reduction Techniques

- **Davos Technique** (a.k.a. Boss-Holzach-Matter Maneuver)
  - Self reduction, lean back
- **Spaso Technique** (supine)
  - Supine, shoulder flexion, traction, ER. 1-2 providers.
- **Traction/Countertraction** (a.k.a. Matsen Technique)
  - 2 providers, 90-90, stabilize with towel or strap
- **Scapular Manipulation**
  - Medial/superior pressure to inferior angle, downward pressure to spine of scap. Second clinician can provide traction.
- **Stimson Technique** (Prone technique)
  - Apply traction or weight, can also manipulate scapula
- **Cunningham technique**
  - Hand on clinician's shoulder, massage deltoid, retract scapulae
- **External Rotation Technique**
  - Traction and external rotation
- **FARES Technique**
  - Oscillation with traction and abduction

(Wright, Brandon, & Reisman, 2020)

External Rotation Technique

- 91% success rate (Alkaduhimi et al., 2017)
- Minimal clinician exertion
- Slow and gentle
- Acceptable for patients with NV compromise

(Wright, Brandon, & Reisman, 2020)

Step 1.
Palpate the deformity to identify direction

(Marinelli & de Palma, 2009)

Step 2.
Flex elbow to 90° and apply traction (patient seated or supine)

(Marinelli & de Palma, 2009)

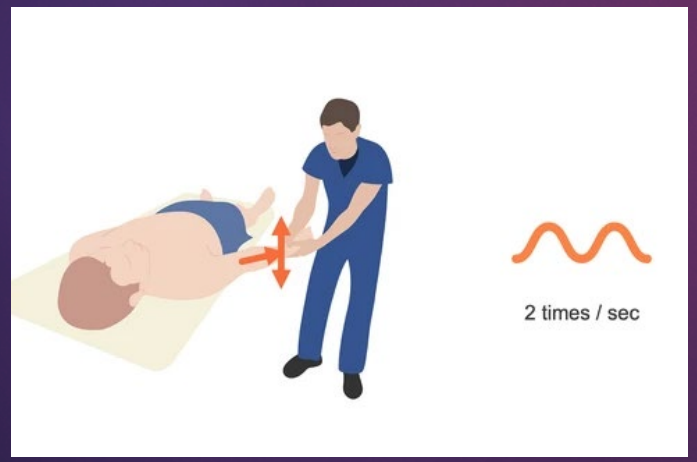
Step 3.
Shoulder is adducted and placed in 20° of flexion

(Marinelli & de Palma, 2009)

Step 4.
Externally rotate until forearm is in coronal plane (maintain traction)

(Marinelli & de Palma, 2009)

FARES Technique



- **Fa**st
- **Re**liable
- **S**afe

- 92% success rate without sedation, short reduction time (2.24min), and low pain score (1.59 on 1-10 VAS) (Alkaduhimi et al., 2017)
- Faster, less painful, and fewer attempts needed compared to ER method (Maity, Roy, & Mondral, 2012)

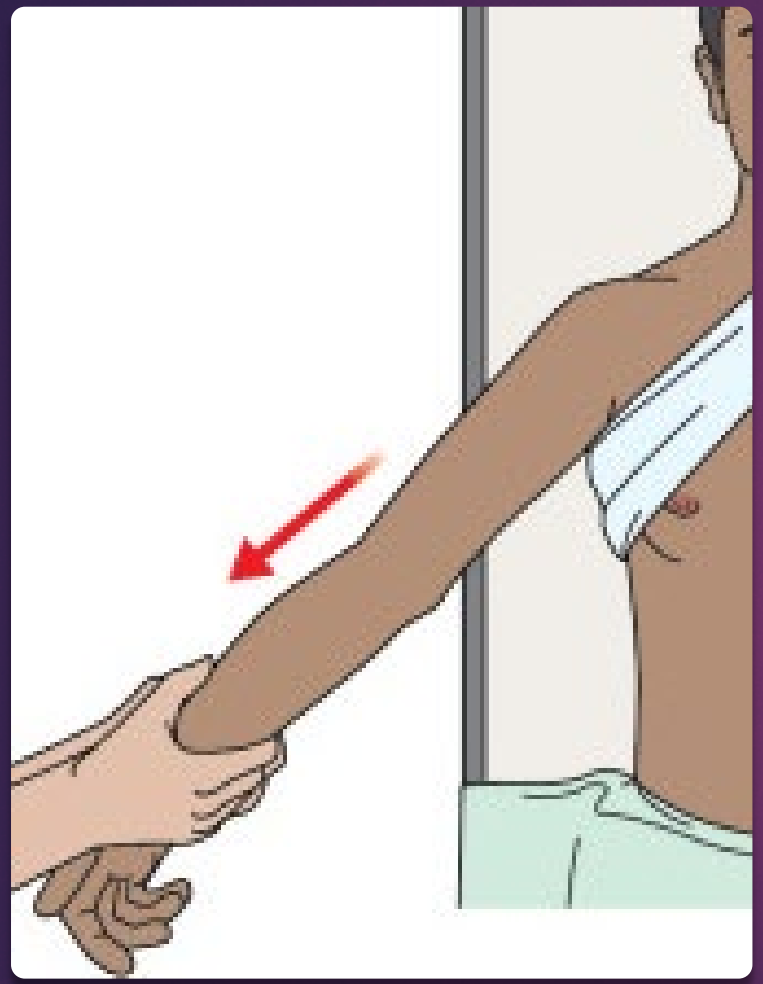
(Sayegh et al., 2009)

Step 1.
Palpate the deformity to identify direction

(Sayegh et al., 2009)

Step 2.
Extend elbow and place forearm in neutral position (patient supine)

(Sayegh et al., 2009)



Step 3.
Apply traction

(Sayegh et al., 2009)

Step 4. Oscillate while abducting shoulder

(Sayegh et al., 2009)

Step 5.
At 90° abduction, externally rotate the shoulder

(Sayegh et al., 2009)

Summary

- Early onsite reduction improves outcomes, decreases pain, and reduces neurovascular risk.
- Remember to rule out fracture, obtain consent, and evaluate neurovascular status before and after reduction.
- State practice acts & standing orders vary—ATs must follow local regulations and physician oversight.
- **We will practice reducing finger and shoulder dislocations and splinting ankle dislocations in the workshop!**

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Thank you!

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