

Upper Extremity Dislocation Trainer Curriculum



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Curriculum Structure

The *Upper Extremity Dislocation Trainer Curriculum* is composed of the following lessons. Approximate lesson times are included.

Lesson	Title	Approximate Time
One	Shoulder Dislocation	60-85 minutes
Two	Elbow Dislocation	60-75 minutes
Three	Finger Dislocation	60-75 minutes
	Total	3 hours - 3 hours and 55 minutes

Lesson Structure

Each lesson begins with a Lesson Overview, Lesson Objectives, and a Lesson at a Glance table, which lists the lesson activities, materials required, suggested preparation steps, and approximate class time.

Lesson Sections

The actual lesson follows the overview, which will contain some of the sections described below. Most lessons are designed to be completed within an hour.

FOCUS

Every lesson begins with a FOCUS activity intended to capture participants' attention. This may be in the form of a small or large class discussion, game, review of previous lesson information, or demonstration. During this activity, participants are introduced to the topic of the lesson.

LEARN

The LEARN activity in each lesson varies in its presentation mode. It may be a slide presentation, group activity, or demonstration.

REVIEW

The majority of lessons end with a REVIEW activity intended to briefly review the lesson's key messages or main points.

Lesson One – Shoulder Dislocations

Lesson Overview

In this lesson, the participants will learn about the anatomy, causes, and treatment of shoulder dislocations.

Lesson Objectives

After completing this lesson, participants will be able to:

- Identify the anatomy of the shoulder affected by a shoulder dislocation
- Examine the causes and types of shoulder dislocations
- Understand and demonstrate how to reduce a shoulder dislocation

Note: Not all relocation techniques are able to be practiced on the Upper Extremity Dislocation Trainer. Please refer to the individual lessons for more information.

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• <i>Shoulder Anatomy Flashcards</i>	1. Print/photocopy <i>Shoulder Anatomy Flashcards</i> (one per team).	15-20 minutes
LEARN	• <i>Shoulder Dislocations</i> slide presentation • Upper Extremity Dislocation Trainer	1. Prepare <i>Shoulder Dislocations</i> slide presentation for viewing. 2. Prepare the Upper Extremity Dislocation Trainer for demonstrations.	25-30 minutes
REVIEW	• Upper Extremity Dislocation Trainer • <i>Shoulder Dislocation Reduction Assessment</i> • <i>Shoulder Dislocation Quiz</i>	1. Print/photocopy <i>Shoulder Dislocation Reduction Assessment</i> (one per team). 2. Print/photocopy <i>Shoulder Dislocation Quiz</i>.	20-25 minutes

Lesson One – Shoulder Dislocations

FOCUS: Guess the Part – Shoulder Anatomy

15-20 minutes

Purpose:

Participants will engage in an interactive guessing game to review the anatomy of the shoulder.

Materials:

- *Shoulder Anatomy Flashcards*

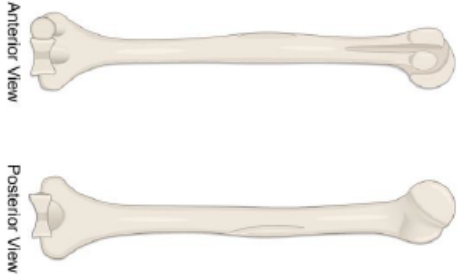
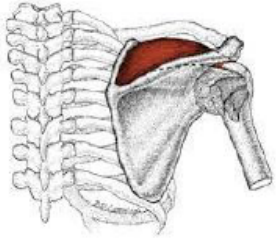
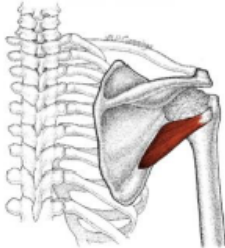
Facilitation Steps:

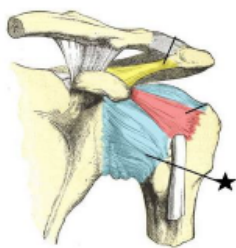
1. Divide the participants into teams of 2-3.
2. Provide each team with a set of flashcards depicting different parts of the shoulder joint.
3. One player from each team will select a card without showing it to their teammates. They should then describe the part without directly naming it while their teammates listen and try to guess the correct anatomical term.

Encourage students to use descriptive terms related to the part's location, shape, and function. For example, if a student selects a card depicting the glenoid cavity, they might describe it as "a shallow, concave socket where the humerus bone fits in like a ball in a socket."

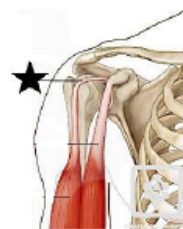
The team members can take turns guessing and describing the parts, fostering both active learning and creative thinking.

Shoulder Anatomy Flashcards

 Anterior View Posterior View Humerus	 Clavicle
 Scapula	 Glenoid Fossa
 Supraspinatus	 Subscapularis
 Infraspinatus	 Teres Minor



Glenohumeral Ligaments



Long Head of the Biceps Tendon



Serratus Anterior



Pectoralis Minor



Trapezius



Rhomboids



Levator Scapulae



Glenoid Labrum

Lesson One – Shoulder Dislocations

LEARN: Shoulder Dislocations

25-30 minutes

Purpose:

Participants will view the slide presentation while the instructor introduces them to the concepts of the causes, symptoms, and treatment of shoulder dislocations.

Materials:

- *Shoulder Dislocations* slide presentation
- Upper Extremity Dislocation Trainer

Facilitation Steps:

1. Share the following information with students as you show the slide presentation:

Slide 1: Title slide

Slide 2: The Shoulder Joint

The shoulder is the most dislocated joint in the human body. Of these dislocations, 96% occur in the anteroinferior direction, 2-4% in the posterior direction, and only 0.5% in the inferior position.

Slide 3: The Glenohumeral Joint

The glenohumeral joint is considered the true joint of the shoulder and a ball-and-socket joint. It is comprised of three bones: the scapula, the clavicle, and the humerus. The humerus articulates with the glenoid fossa of the scapula.

It's important to note that the bony anatomy provides minimal constraints and allows for a large range of motion. This results in the shoulder joint being inherently unstable as

only 25-30% of the humeral head articulates with the glenoid at any one time.

We've already reviewed the anatomy of the shoulder, but it's important to note that the bony anatomy provides minimal constraints and allows for a large range of motion.

Slide 4: Static Stabilizers

The static stabilizers of the shoulder joint include the glenoid labrum, the glenohumeral ligaments, the concavity of the glenoid fossa, and the intra-articular pressure in the joint.

The glenoid labrum is a fibrocartilaginous structure that rings the circumference of the glenoid fossa. The glenohumeral ligaments combine to form the glenohumeral joint capsule connecting the glenoid fossa to the humerus.

Slide 5: Dynamic Stabilizers

The dynamic stabilizers of the shoulder joint are the muscles that surround the joint and the remainder of the shoulder. They include the long head of the bicep tendon, the rotator cuff muscles, and the periscapular muscles.

The static and dynamic stabilizers work in synchrony to maintain shoulder stability in performing the extreme activities required

by the shoulder in sports and heavy manual work.

Slide 6: Anterior Dislocation

As previously mentioned, anterior dislocations are the most common type of dislocation. They can be caused by either indirect or direct trauma to the shoulder.

An anterior dislocation caused by indirect trauma to the arm occurs when the shoulder is abducted, extended, and externally rotated. Falling on an outstretched arm that is in this position will often cause the shoulder to dislocate anteriorly (as shown in the image).

Direct trauma that causes an anterior dislocation occurs when an impact or force to the posterior shoulder causes the shoulder to be pushed anteriorly. This injury often occurs in skiing, basketball, football, and rugby.

Slide 7: Posterior Dislocation

The most common mechanism for a posterior dislocation is falling onto the outstretched arm while it is slightly adducted and internally rotated. This type of dislocation can also occur by a hit to the anterior shoulder, causing the head of the humerus to be pushed posteriorly.

Slide 8: Inferior Dislocation

A sudden, forceful arm hyperabduction most commonly causes an inferior shoulder dislocation. It can also be caused, although much less often, by a direct loading force to

a fully abducted arm with an extended elbow and pronated forearm.

A patient with an inferior dislocation will often present with their arm overhead and their hand supported on the top of their head.

Slide 9: Incidence and Recurrence

The highest rates of shoulder dislocations (in any direction) occur in males 21-30 years old and in females 61-80 years old.

The recurrence rate for shoulder dislocations in all ages is 50%, with a much higher recurrence rate (89%) in 14–20-year-olds.

Slide 10: Signs and Symptoms

A patient who has suffered a shoulder dislocation will present with severe pain, difficulty with arm movement, and impaired range of motion. They may also experience numbness in their arm due to axillary nerve compression.

In anterior dislocations, the patient may have a noticeable deformity of the shoulder and a palpable gap in the subdeltoid region (as seen in the image on the slide).

Slide 11: Reduction Techniques

There are more than 50 recorded shoulder dislocation reduction techniques that exist. They vary based on the type of technique used, including traction, leverage, and biomechanical techniques.

Which technique is used for reduction is determined by the clinician. It is also dependent on the type of dislocation, the amount of pain the patient is experiencing, and the severity of the injury.

Slide 12: Video

We will focus on 10 techniques. Each of these techniques can be seen in this video and will be reviewed on the remaining slides.

Slide 13: Prone Scapular Manipulation

When performing the prone scapular manipulation technique, the patient must be placed supine with the injured arm hanging off the side of the table.

The clinician will attach 5-10 lbs. to the wrist of the patient to apply traction to the arm. The clinician then uses their hands to push the inferior tip of the scapula medially while moving the superior aspect of the scapula laterally.

Not able to perform this technique on the Upper Extremity Dislocation Trainer.

Slide 14: Scapular Manipulation (Upright)

To perform the scapular manipulation technique in an upright position, the patient is seated with their uninjured shoulder leaning back against the bed.

One clinician stands behind the patient and applies medial force to the scapula while a second clinician provides gentle downward pressure on the patient's humerus (as shown in the pictures).

Not able to perform this technique on the Upper Extremity Dislocation Trainer.

Slide 15: Spaso Technique

When performing the Spaso technique, the patient is in a supine position with their arm lifted and held in a vertical position. The clinician then provides gentle traction while slightly externally rotating the arm.

Reduction with this method will usually occur after a few minutes of gentle traction. If difficulty is experienced, it may be helpful to use one hand to palpate the head of the humerus and gently push it to assist the reduction while maintaining traction with the other hand.

Demonstrate how to perform this technique on the Upper Extremity Dislocation Trainer.

Slide 16: External Rotation Technique

To perform the external rotation technique, the patient is placed in a supine position with their arm next to their torso. The elbow is flexed to 90°, and the shoulder is flexed to 20°. The shoulder is then slowly externally rotated until the arm is parallel to the body.

Demonstrate how to perform this technique on the Upper Extremity Dislocation Trainer.

Slide 17: Milch Technique

The Milch technique is performed with the patient in the supine position, with the clinician holding the patient's arm at the wrist. The arm is abducted into an overhead position while simultaneously externally rotating the arm to 90°.

Demonstrate how to perform this technique on the Upper Extremity Dislocation Trainer.

Slide 18: Traction-Counter-Traction Technique

Traction-counter-traction is performed with two clinicians and the patient in a supine position. One clinician has a sheet wrapped around the patient's body, while the other clinician ties a sheet around the patient's injured arm and the clinician's waist. Both clinicians apply gentle traction in opposite directions.

Demonstrate how to perform this technique on the Upper Extremity Dislocation Trainer.

Slide 19: Fast, Reliable, and Safe (FARES) Method

To perform the FARES technique, the patient lies supine while the clinician holds the patient's wrist with both hands, keeping the arm fully extended and in a neutral position.

The clinician slowly abducts the arm in an oscillating movement while applying continuous longitudinal traction. The

clinician externally rotates the shoulder once the arm has been abducted beyond 90°. Reduction usually occurs at approximately 120° of abduction.

Demonstrate how to perform this technique on the Upper Extremity Dislocation Trainer.

Slide 20: Cunningham Technique

The Cunningham technique is performed with the patient in a seated position, their shoulders against the back of a chair or bed.

The patient's arm is placed against their side in an adducted position with the elbow flexed to 90°. The clinician holds the inside of the elbow and applies gentle downward traction while massaging the bicep, triceps, and deltoid muscles.

Demonstrate how to perform this technique on the Upper Extremity Dislocation Trainer.

Slide 21: Stimson Technique

The patient lies prone with the injured arm hanging off the side of the table when performing the Stimson technique. The clinician holds the wrist and applies downward traction while externally rotating and abducting the arm. Alternatively, a weight can be added to the patient's arm to provide traction.

Demonstrate how to perform this technique on the Upper Extremity Dislocation Trainer.

Slide 22: Inferior Dislocation Counter-Traction Technique

An inferior dislocation can be reduced using the inferior dislocation counter-traction technique. The patient is placed in a supine position. The patient's injured arm will likely be in a fully abducted arm.

One clinician places a sheet around the body of the patient to apply traction in an axial direction, while the second clinician applies traction to the patient's injured arm.

Demonstrate how to perform this technique on the Upper Extremity Dislocation Trainer.

Slide 23: Posterior Dislocation Reduction Technique

The posterior dislocation reduction technique is done with the patient in a seated position. One clinician wraps a sheet around the patient's body and places the sheet in the axillary space to provide counter traction. Another clinician applies axial traction and externally rotates the arm.

Demonstrate how to perform this technique on the Upper Extremity Dislocation Trainer.

Lesson One – Shoulder Dislocations

REVIEW: Shoulder Dislocation Reduction Practice

20-25 minutes

Purpose:

Participants will learn the necessary steps to reducing a shoulder dislocation by practicing the reduction techniques.

Materials:

- Upper Extremity Dislocation Trainer
- *Shoulder Dislocation Reduction Assessment*
- *Shoulder Dislocation Quiz*

Facilitation Steps:

1. Divide the participants into teams of 2-3 and provide each group the *Shoulder Dislocation Reduction Assessment*.
2. Have participants practice hand placement and positioning for each technique on one another while one group performs the dislocation techniques on the Upper Extremity Dislocation Trainer.

3. Have each group member perform a peer assessment on the technique of another participant in their group using the *Shoulder Dislocation Reduction Assessment*.

You may choose to assign one, multiple, or all techniques to be assessed. Alternatively, the rubric can be used to perform a formative assessment on participants by randomly assigning a reduction technique for them to perform (after adequate practice opportunities).

4. Distribute the *Shoulder Dislocation Quiz* to the participants and give them time to complete.
5. Collect the quizzes for grading.

Name: _____ Class: _____

Shoulder Dislocation Reduction Assessment

Instructions: Have each participant perform a peer assessment on another group member using the rubric below.

Criteria	3	2	1
Execution of Skill Demonstrates proper techniques and execution of the reduction technique. Consistently applies the correct sequence of steps and movements. Successfully reduces the dislocation on the first attempt.	The skill execution is consistently accurate, demonstrating a high level of proficiency and precision. Demonstrates ability to reduce the dislocation using the chosen technique.	The skill execution is generally correct, but occasional errors or inconsistencies are observed. Demonstrates the ability to reduce the dislocation but requires multiple attempts to accomplish the reduction.	The skill execution is consistently incorrect or lacks a basic understanding of the technique. Does not demonstrate the ability to reduce the dislocation.

Reduction Technique	Grade		
Prone Scapular Manipulation	3	2	1
Scapular Manipulation (Upright)	3	2	1
Spaso	3	2	1
External Rotation	3	2	1
Milch	3	2	1
Traction-Counter-Traction	3	2	1
FARES	3	2	1
Cunningham	3	2	1
Stimson	3	2	1
Inferior Dislocation Counter-Traction	3	2	1
Poster Dislocation Reduction Technique	3	2	1

Name: _____ Class: _____

Shoulder Dislocation Quiz

Instructions: Choose the correct answer.

1. Which direction accounts for most shoulder dislocations?
 - a) Anterior
 - b) Posterior
 - c) Inferior
 - d) Superior
2. What are the static stabilizers of the shoulder joint?
 - a) Muscles surrounding the joint
 - b) Glenoid labrum, glenohumeral ligaments, concavity of the glenoid fossa, intra-articular pressure
 - c) Glenohumeral joint capsule, humerus, scapula
 - d) Biceps tendon, rotator cuff muscles, periscapular muscles
3. What is the most common type of shoulder dislocation?
 - a) Posterior dislocation
 - b) Anterior dislocation
 - c) Inferior dislocation
 - d) Superior dislocation
4. Which age group has the highest incidence of shoulder dislocations?
 - a) Males 21-30 years old
 - b) Females 61-80 years old
 - c) Males 14-20 years old
 - d) Females 21-30 years old
5. What are the signs and symptoms of a shoulder dislocation?
 - a) Severe pain, difficulty with arm movement, impaired range of motion
 - b) Numbness in the arm, visible deformity, a palpable gap in the subdeltoid region
 - c) Inability to lift the arm, weakness in the shoulder muscles, tingling sensation
 - d) Fatigue, dizziness, headache

6. Which technique involves pushing the inferior tip of the scapula medially while moving the superior aspect of the scapula laterally?
 - a) Prone scapular manipulation
 - b) Scapular manipulation (upright)
 - c) Spaso technique
 - d) External rotation technique
7. Which technique is performed with the patient in a seated position with one clinician applying medial force to the scapula and another clinician providing gentle downward pressure on the humerus?
 - a) Prone scapular manipulation
 - b) Scapular manipulation (upright)
 - c) Spaso technique
 - d) External rotation technique
8. Which technique involves the patient lying supine with their arm lifted and held in a vertical position while the clinician provides gentle traction and slight external rotation?
 - a) Prone scapular manipulation
 - b) Scapular manipulation (upright)
 - c) Spaso technique
 - d) External rotation technique
9. Which technique is performed with the patient in a supine position, with the clinician holding the patient's arm at the wrist, abducting it overhead, and externally rotating it to 90 degrees?
 - a) Milch technique
 - b) Traction-counter-traction technique
 - c) FARES method
 - d) Cunningham technique
10. Which technique involves the patient lying prone with the injured arm hanging off the side of the table while the clinician applies downward traction, external rotation, and abduction to the arm?
 1. Milch technique
 2. Traction-counter-traction technique
 3. FARES method
 4. Stimson technique

Name: _____ Class: _____

Shoulder Dislocation Quiz – Answer Key

1. Which direction accounts for most shoulder dislocations?
a) Anterior
b) Posterior
c) Inferior
d) Superior
2. What are the static stabilizers of the shoulder joint?
a) Muscles surrounding the joint
b) Glenoid labrum, glenohumeral ligaments, concavity of the glenoid fossa, intra-articular pressure
c) Glenohumeral joint capsule, humerus, scapula
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d) Fatigue, dizziness, headache

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c) Spaso technique
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7. Which technique is performed with the patient in a seated position, with one clinician applying medial force to the scapula and another clinician providing gentle downward pressure on the humerus?
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b) Scapular manipulation (upright)
c) Spaso technique
d) External rotation technique
8. Which technique involves the patient lying supine with their arm lifted and held in a vertical position while the clinician provides gentle traction and slight external rotation?
a) Prone scapular manipulation
b) Scapular manipulation (upright)
c) Spaso technique
d) External rotation technique
9. Which technique is performed with the patient in a supine position, with the clinician holding the patient's arm at the wrist, abducting it overhead, and externally rotating it to 90 degrees?
a) Milch technique
b) Traction-counter-traction technique
c) FARES method
d) Cunningham technique
10. Which technique involves the patient lying prone with the injured arm hanging off the side of the table while the clinician applies downward traction, external rotation, and abduction to the arm?
a) Milch technique
b) Traction-counter-traction technique
c) FARES method
d) Stimson technique

Lesson Two – Elbow Dislocations

Lesson Overview

In this lesson, the participants will learn about the anatomy, causes, and treatment of elbow dislocations.

Lesson Objectives

After completing this lesson, participants will be able to:

- Identify the anatomy of the elbow affected by a dislocation
- Examine the causes and symptoms of elbow dislocations
- Understand and demonstrate how to reduce elbow dislocations

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• Colored stickers or adhesive dots (two different colors) • Large sheets of paper or cardboard • Markers or pens • Stopwatch or time	1. Prepare a large sheet of paper or cardboard (one per team) 2. Provide each team with a set of colored stickers or adhesive dots and markers or pens	20-25 minutes
LEARN	• <i>Elbow Dislocations</i> slide presentation • Upper Extremity Dislocation Trainer	1. Prepare <i>Elbow Dislocations</i> slide presentation for viewing. 2. Prepare the Upper Extremity Dislocation Trainer for demonstration.	20-25 minutes
REVIEW	• Upper Extremity Dislocation Trainer • <i>Elbow Dislocation Quiz</i>	1. Prepare the Upper Extremity Dislocation Trainer for use. 2. Print/photocopy <i>Elbow Dislocation Quiz</i> (one per participant).	20-25 minutes

Lesson Two – Elbow Dislocations

FOCUS: Joint Connections Relay – Elbow Anatomy

20-25 minutes

Purpose:

Participants will build a foundation of knowledge about the elbow joint's anatomy and movements.

Materials:

- Colored stickers or adhesive dots (two different colors)
- Large sheets of paper or cardboard
- Markers or pens
- Stopwatch or timer

Facilitation Steps:

1. Divide the students into small groups of 4-6 participants.
2. Prepare large sheets of paper or cardboard for each group. Have students draw a diagram of the elbow joint on each sheet, leaving enough space for labeling.
3. Place colored stickers or adhesive dots (two different colors) near the sheet and provide each group with markers or pens.
4. Assign roles within each group:
 - a. One person will be the Researcher. They are responsible for finding information about the elbow joint and its movements.
 - b. Two or more participants will be the Labelers. They are in charge of labeling the different parts of the joint on the diagram.
 - c. The remaining member(s) will be the Explainers, who will present their findings to the class.
5. Explain the relay race rules:
 - a. The Researcher starts by picking up a colored sticker (color A) and researching one aspect of the elbow joint's structure or function.
 - b. They place the sticker on the corresponding part of the joint diagram and pass the marker to the Labelers.
 - c. The Labelers write the name of the part next to the sticker and pick another colored sticker (color B) for the next part to label.
 - d. The Labelers hand the marker to the Explainers.
 - e. The Explainers prepare a brief explanation of the part labeled before the next round.
6. Start the relay race:
 - a. Time each round using a stopwatch or timer (around 3 minutes per round).
 - i. Round 1: Olecranon
 - ii. Round 2: Olecranon fossa
 - iii. Round 3: Radial Head
 - iv. Round 4: Medial Epicondyle
 - v. Round 5: Lateral Epicondyle

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7. Conclusion: Gather all the groups and have the Explainers present their labeled diagrams while explaining the different parts of the elbow joint.

Encourage questions and discussions among students to reinforce their understanding of the elbow joint's structure and function.

Lesson Two – Elbow Dislocations

LEARN: Elbow Dislocations

20-25 minutes

Purpose:

Participants will view the slide presentation while the instructor introduces them to the concepts of the causes, symptoms, and treatment of elbow dislocations.

Materials:

- *Elbow Dislocations* slide presentation
- Upper Extremity Dislocation Trainer

Facilitation Steps:

1. Share the following information with students as you show the slide presentation:

Slide 1: Title slide

Slide 2: Elbow Dislocations

The elbow joint is a very stable joint and requires significant force to dislocate. The highest rates of dislocations occur in sports such as football, rollerblading, skateboarding, and wrestling.

It is the second most dislocated large joint. In children, it is the most dislocated large joint. Elbow dislocations occur more in men than in women and occur most often in males 10-19 years old.

Slide 3: Elbow Joint

The elbow joint, also called the humero-ulnar joint, is a hinge joint that allows flexion and extension. It is the articulation of three bones: the humerus, the ulna, and the radius.

Use the picture or Upper Extremity Dislocation Trainer to review the anatomy of the elbow.

The humerus contains the medial and lateral epicondyles. The olecranon fossa on the humerus and the olecranon process on the ulna are important landmarks to be able to identify when discussing elbow dislocations.

The head of the radius articulates with the ulna and rotates when pronating and supinating the hand.

Slide 4: Elbow Flexors and Extensors

There are several muscles that you need to be aware of that cross or surround the elbow joint.

The elbow flexors include the biceps brachii, brachialis, and brachioradialis. The extensor of the elbow is the triceps brachii.

Use the image to review the relevant anatomy.

Slide 5: Wrist Flexor and Extensors

The wrist flexors attach at the medial epicondyle, while the wrist extensors attach at the lateral condyle. Even though these muscles do not cross the joint, they can be injured during an elbow dislocation due to the posterior movement of the radius and ulna.

Use the image to review the relevant anatomy.

Slide 6: Elbow Ligaments

There are three elbow ligaments that are necessary to be aware of: the medial collateral ligament, the lateral collateral ligament, and the annular ligament.

The medial collateral ligament connects the humerus to the ulna, while the lateral collateral ligament connects the humerus to the radius.

The annular ligament holds the head of the radius in place.

Use the image to review the relevant anatomy.

Slide 7: Mechanism of Injury

The most common mechanism of injury for an elbow dislocation is a fall on an outstretched hand, or a FOOSH injury.

A posterior dislocation occurs when the elbow is hyperextended with the arm in abduction and the forearm supinated. This causes the olecranon to be pushed posteriorly.

An anterior dislocation occurs when there is a direct force to the posterior forearm while the elbow is in flexion or from a fall onto a flexed elbow.

Slide 8: Signs and Symptoms

Signs and symptoms of an elbow dislocation include severe pain, obvious deformity, and loss of function of the elbow. There may also be swelling, bruising, and numbness of the forearm or hand.

Use the image to point out the swelling and bruising on the patient's arm. A 62-year-old female suffered a fall on the outstretched hand, suffering a posterolateral elbow dislocation of her left arm (Barco et al, 2023).

Slide 9: Prone Reduction Technique

While there are many different reduction techniques that can be performed, we are going to focus on the two most used techniques.

The prone reduction technique is performed by having the patient lie in a prone position with their elbow flexed to 90° and hanging over the edge of the bed.

The clinician applies both axial traction and direct pressure to the olecranon to guide the elbow back into place. This technique can require traction for up to 10 minutes before the elbow returns to its normal position.

Slide 10: Video

Show the video of the prone reduction technique and demonstrate how to perform this technique on the Upper Extremity Dislocation Trainer.

Slide 11: Supine Reduction Technique

When performing this technique, the patient is supine or in a seated position. The clinician supports the hand and applies traction and flexion, while the other hand is placed on the humerus to provide counter traction.

The clinician places their fingertips over the tip of the dislocated olecranon to guide the reduction. Once the elbow begins to shift, longitudinal traction is applied with a varus stress and simultaneous pronation.

This maneuver re-creates the injury mechanism and replicates the deformity.

Once the elbow reduces, the forearm is held in pronation to stabilize the joint.

Slide 12: Video

Show the video of the prone reduction technique and demonstrate how to perform this technique on the Upper Extremity Dislocation Trainer.

Slide 13: Post-Reduction Treatment

The patient should be placed in an elbow brace or cast for two to three weeks, with early ROM being performed as soon as one to two weeks after the injury. The patient may also prefer a sling for comfort until their pain levels decrease.

Lesson Two – Elbow Dislocations

REVIEW: Elbow Dislocation Reduction Practice

20-25 minutes

Purpose:

Participants will learn the necessary steps to reducing an elbow dislocation by practicing the reduction techniques.

Materials:

- *Upper Extremity Dislocation Trainer*
- *Elbow Dislocation Quiz*

Facilitation Steps:

1. Divide the participants into groups of 2-3.
2. Have participants practice hand placement and positioning for each technique on one another while 1 group performs the reduction techniques on the Upper Extremity Dislocation Trainer.
3. Provide participants with feedback and correction to ensure proper performance of the reduction techniques.
4. Distribute the *Elbow Dislocation Quiz* and give participants time to complete it.
5. Collect the quiz for grading.

Name: _____ Class: _____

Elbow Dislocation Quiz

Instructions: Choose the correct answer.

1. Which age group is most affected by elbow dislocations, according to the slide presentation?
 - a) Children under 10 years old
 - b) Adolescents that are 10-19 years old
 - c) Adults that are 20-40 years old
 - d) Elderly individuals above 60 years old
2. What type of joint is the elbow joint?
 - a) Ball and socket
 - b) Hinge
 - c) Saddle
 - d) Gliding
3. Which of the following sports has the highest rate of elbow dislocations?
 - a) Basketball
 - b) Soccer
 - c) Football
 - d) Baseball
4. In children, which joint is the most dislocated large joint?
 - a) Knee
 - b) Shoulder
 - c) Elbow
 - d) Hip
5. Which muscles are considered elbow flexors?
 - a. Deltoid and triceps brachii
 - b. Biceps brachii, brachialis, and brachioradialis
 - c. Quadriceps and hamstrings
 - d. Gluteus maximus and gluteus medius
6. Which ligament holds the head of the radius in place?
 - a) Medial collateral ligament
 - b) Lateral collateral ligament
 - c) Annular ligament
 - d) Anterior cruciate ligament
7. What is the most common mechanism of injury for an elbow dislocation?

Upper Extremity Dislocation Trainer Curriculum

- a) Hyperextension with forearm pronation
 - b) Direct force to the posterior forearm
 - c) Fall on an outstretched hand
 - d) Abduction of the arm
8. What are the signs and symptoms of an elbow dislocation?
- a) Mild pain and slight bruising
 - b) Severe pain, obvious deformity, and loss of function
 - c) Numbness in the fingers and swelling in the shoulder
 - d) Stiffness and limited range of motion
9. How is the prone reduction technique performed?
- a) The patient lies supine with the elbow flexed to 90 degrees
 - b) The clinician applies traction and flexion to the elbow
 - c) The clinician guides the reduction by placing their fingertips over the tip of the dislocated olecranon
 - d) The patient lies prone with the elbow flexed to 90 degrees and hanging over the edge of the bed
10. How long should a patient be placed in an elbow brace or cast after an elbow dislocation?
- a) 1-2 days
 - b) 2-3 weeks
 - c) 4-6 months
 - d) 1 year

Elbow Dislocation Quiz – Answer Key

1. Which age group is most affected by elbow dislocations, according to the information provided?
 - a) Children under 10 years old
 - b) Adolescents that are 10-19 years old**
 - c) Adults that are 20-40 years old
 - d) Elderly individuals above 60 years old
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 - d) Gluteus maximus and gluteus medius
6. Which ligament holds the head of the radius in place?
 - a. Medial collateral ligament
 - b. Lateral collateral ligament
 - c. Annular ligament**
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7. What is the most common mechanism of injury for an elbow dislocation?
 - a. Hyperextension with forearm pronation
 - b. Direct force to the posterior forearm
 - c. Fall on an outstretched hand**
 - d. Abduction of the arm

8. What are the signs and symptoms of an elbow dislocation?
 - a. Mild pain and slight bruising
 - b. Severe pain, obvious deformity, and loss of function**
 - c. Numbness in the fingers and swelling in the shoulder
 - d. Stiffness and limited range of motion

9. How is the prone reduction technique performed?
 - a) The patient lies supine with the elbow flexed to 90 degrees
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 - d) The patient lies prone with the elbow flexed to 90 degrees and hanging over the edge of the bed**

10. How long should a patient be placed in an elbow brace or cast after an elbow dislocation?
 - a) 1-2 days
 - b) 2-3 weeks**
 - c) 4-6 months
 - d) 1 year

Lesson Three – Finger Dislocations

Lesson Overview

In this lesson, students will learn to identify, describe, and demonstrate the steps to manage a finger dislocation.

Lesson Objectives

After completing this lesson, participants will be able to:

- Identify the anatomy of the fingers
- Examine the causes and types of finger dislocations
- Understand and demonstrate how to treat a finger dislocation

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• <i>Finger Anatomy and Dislocation</i> worksheet • <i>Finger Anatomy and Dislocation</i> – Answer Key • Finger Relocation Video	1. Print/photocopy <i>Finger Anatomy and Dislocation</i> (one per participant).	20-25 minutes
LEARN	• <i>Finger Dislocations</i> slide presentation • Upper Extremity Dislocation Trainer	1. Prepare <i>Finger Dislocations</i> slide presentation for viewing. 2. Prepare the Upper Extremity Dislocation Trainer for demonstration.	20-25 minutes
REVIEW	• Upper Extremity Dislocation Trainer • <i>Finger Dislocation Quiz</i> • <i>Finger Dislocation Quiz</i> – Answer Key	• Prepare Upper Extremity Dislocation Trainer for relocation practice. • Print/photocopy the <i>Finger Dislocation Quiz</i> (one per participant).	20-25 minutes

Lesson Three – Finger Dislocations

FOCUS: Finger Anatomy

15-20 minutes

Purpose:

Participants will watch a video and answer questions to review the anatomy of the fingers and be introduced to the topic of finger dislocations.

Materials:

- [Finger Relocation Video](#)
- *Finger Anatomy and Dislocation* worksheet
- *Finger Anatomy and Dislocation* – Answer Key

Facilitation Steps:

1. Prepare the video for viewing and distribute the *Finger Anatomy and Dislocation* worksheet.
2. Instruct participants to read over the questions before you start the video.
3. Play the video for students to watch and respond to questions.

4. Discuss the answers to the multiple-choice questions and facilitate a class discussion about what the students found interesting in the video.

The following questions can help to facilitate the discussion if needed:

- a. What are some other things to consider besides the bone being out of place with finger dislocations?

Associated fractures and the behavior of surrounding tissues.

- b. Why do some people who try to pop their joints back into place without going to the doctor's office have trouble?

The muscles surrounding the joint contract and become so tight that they are not able to move the joint.

- c. What were the names of types of dislocations mentioned in the video?

Dorsal and volar dislocations

Name: _____ Class: _____

Finger Anatomy and Dislocation

Instructions: Watch the video shown in class and choose the correct answer for the questions below.

1. Why do some people have difficulty popping their joints back into place?
 - a) Joint is too swollen
 - b) Muscles are too tight
 - c) Tendons are damaged
 - d) Joint is dislocated in multiple places
2. What is the protocol for reducing a dorsal dislocation?
 - a) Flexion and forward traction
 - b) Hyperextension and forward traction
 - c) Flexion and backward traction
 - d) Hyperextension and backward traction
3. Why is it important to put a dorsal dislocation into slight hyperextension?
 - a) To put less tension on the tendons
 - b) To put more tension on the tendons
 - c) To reduce the risk of avulsion fractures
 - d) To reduce the risk of nerve damage
4. What is the name of the joint that tends to be the most dislocated?
 - a) MCP joint
 - b) PIP joint
 - c) DIP joint
 - d) IP joint
5. Which direction do dorsal dislocations tend to go?
 - a) Towards the palm of the hand
 - b) Away from the palm of the hand
 - c) Sideways
 - d) None of the above

Name: _____ Class: _____

Finger Anatomy and Dislocation

Instructions: Watch the video shown in class and choose the correct answer for the questions below.

1. Why do some people have difficulty popping their joints back into place?
 - a) Joint is too swollen
 - b) Muscles are too tight**
 - c) Tendons are damaged
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 - a) MCP joint
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 - d) IP joint
5. Which direction do dorsal dislocations tend to go?
 - a) Towards the palm of the hand
 - b) Away from the palm of the hand**
 - c) Sideways
 - d) None of the above

Lesson Three – Finger Dislocations

LEARN: Finger Dislocations

20-25 minutes

Purpose:

Participants will view a slide presentation that introduces them to the concepts of the causes, symptoms, and treatment of finger dislocations.

Materials:

- *Finger Dislocations* slide presentation

Facilitation Steps:

1. Share the following information with students as you show the slide presentation:

Slide 1: Title slide

Slide 2: Finger Dislocations

Finger dislocations are categorized by the position of the distal bone relative to the more proximal bone. A dorsal dislocation occurs when the distal phalanx of the injured joint is displaced toward the back of the hand.

A volar dislocation occurs when the distal phalanx to the injured joint is displaced toward the palm. A lateral dislocation occurs when the phalanx that is distal to the injured joint is displaced to the side.

Slide 3: Finger Joints

Let's review some anatomy first. Dislocations of the fingers can occur at any of the finger joints, the metacarpophalangeal (MCP) joint, the proximal phalangeal (PIP) joint, or the distal phalangeal (DIP) joint.

Use the image to review bones and joints of the hand with the participants.

Slide 4: Proximal Interphalangeal (PIP) Joints

We're going to focus on proximal interphalangeal joint and the metacarpophalangeal joint dislocations. The proximal interphalangeal joint, or PIP joint, is the articulation of the middle phalanx and the proximal phalanx.

It is a hinge joint that allows flexion and extension of the joint. There is very little lateral movement at this joint due to the ulnar and radial collateral ligaments that stabilize the joint.

Slide 5: Metacarpophalangeal (MCP) Joint

The metacarpophalangeal joint is the articulation of the proximal phalanx and the metacarpal bone. It is a condyloid joint that allows flexion, extension, abduction, adduction, and circumduction.

Slide 6: Static Stabilizers

The joints of the fingers have several static stabilizers that surround the joint and protect it from unwanted movement. The volar plate reinforces the volar (palmar) side of the joint capsule and maintains stability by preventing hyperextension of the finger joints.

The collateral ligaments of the finger provide stabilization against radial and ulnar deviation of the joint.

Use the image to review the soft tissue of the finger with the participants.

Slide 7: Dynamic Stabilizers

Along with the static stabilizers, the fingers have several dynamic stabilizers. The extrinsic and intrinsic tendons of the fingers are two important dynamic stabilizers.

The central slip tendon is found dorsally and provides stability to the PIP.

Use the image to review the soft tissue of the finger with the participants.

Slide 8: Mechanism of Injury

Dislocations occur when there is a forced hyperextension or hyperflexion of the digit. This typically occurs from a direct axial impact with a ball or another person. They can also occur when the finger gets trapped between two objects or from falling on the hand.

Slide 9: Incidence

Finger dislocations are very common in athletics. They are most likely to occur in sports such as football, rugby, or basketball.

Slide 10: Symptoms

Symptoms often associated with a finger dislocation include obvious deformity and swelling. There will be a significant amount of pain with this injury.

The finger may bruise and there will be decreased range of motion while the joint is dislocated. In severe injuries, numbness or tingling of the distal portion of the finger may occur due to damage to the surrounding nerves.

Slide 11: Proximal Interphalangeal (PIP) Dislocation

The most injured joint in the hand is the PIP joint. Dislocations at the PIP joint are most commonly dorsal dislocations that result from longitudinal compression and hyperextension. This type of dislocation at the PIP joint is

associated with volar plate, collateral ligament, and dorsal joint capsule injuries.

Slide 12: Reduction of a Dorsal PIP Joint Dislocation

To reduce a dorsal dislocation, the clinician must stabilize the proximal phalanx with one hand. With the other hand, the clinician will move the joint into hyperextension to relieve tension on the extensor muscles and apply direct pressure over the dorsal aspect of the middle phalanx.

Gentle longitudinal traction can also be applied to the distal phalanx as volar pressure is applied.

Demonstrate how to perform this technique on the Upper Extremity Dislocation Trainer.

Note: Remind students that this was the reduction shown in the video at the beginning of the lesson.

Slide 13: Dislocation of the MCP Joint

Dislocations at the metacarpophalangeal joint are relatively uncommon due to the protected location of the joint in the hand. These dislocations can be dorsal, volar, or lateral. They occur because of a hyperextension or hyperflexion injury to the MCP joint.

We will focus on volar and lateral since we covered dorsal dislocations at the PIP joint. The index finger in the most dislocated MCP joint, followed by the thumb as the second most dislocated MCP joint.

Slide 14: Volar Dislocation of the MCP joint

Volar dislocations are caused by hyperflexion of the MCP or by a force applied to the proximal phalanx while it is flexed. When these dislocations occur, the proximal phalanx slips

below the metacarpal head toward the palmar surface.

Use the image to show a volar dislocation. Note the arrow on the x-ray, which points to the dislocation.

Slide 15: Volar Dislocation Reduction Technique

To reduce a volar dislocation, the clinician should hold the finger and wrist in slight flexion. This will allow the flexor tendons to relax allowing for easier reduction.

With one hand stabilizing the metacarpal, the clinician applies direct pressure to the volar aspect of the proximal phalanx. Note that traction should never be applied in a volar or dorsal MCP joint dislocation as it is often pulled surrounding soft tissues into the joint, making the dislocation irreducible.

Demonstrate how to perform this technique on the Upper Extremity Dislocation Trainer.

Slide 16: MCP Joint Lateral Dislocation

Lateral dislocations of the finger joints occur when abduction or adduction forces are applied to an extended finger. The collateral ligaments are strongest when the fingers are flexed and weakest when the finger is fully extended, allowing for excessive lateral movement in the extended position.

Lateral dislocations are commonly caused by FOOSH (falling on outstretched hand) injuries or when the finger is caught on something, such as an opponent's jersey.

Slide 17: Reduction of the Lateral Dislocation

To reduce a lateral dislocation, the clinician should stabilize the metacarpal with one hand, while applying gentle traction to the finger with the other hand. As the traction is applied, the finger is moved into extension and guided back into place.

Demonstrate how to perform this technique on the Upper Extremity Dislocation Trainer.

Slide 18: Treatment

Each type of dislocation is splinted in a different manner. Volar dislocations are reduced and splinted in extension for three weeks, while dorsal dislocations are splinted in either 30° of flexion for two to three weeks or buddy taped for two to three weeks if the joint is stable.

Lateral dislocations are splinted with buddy tape for two to three weeks.

Lesson Three – Finger Dislocations

REVIEW: Finger Dislocation Reduction Practice

20-25 minutes

Purpose:

Participants will learn the necessary steps to reducing a finger dislocation by practicing the reduction techniques.

Materials:

- Upper Extremity Dislocation Trainer
- *Finger Dislocation Quiz*
- *Finger Dislocation Quiz – Answer Key*

Facilitation Steps:

1. Divide the participants into groups of 2-3.
2. Have participants practice hand placement and positioning for each technique on one another while 1 group performs the reduction techniques on the Upper Extremity Dislocation Trainer.
3. Provide participants with feedback and correction to ensure proper performance of the reduction techniques.
4. Distribute the *Finger Dislocation Quiz* to participants and give them time to complete it.
5. Collect the quiz for grading.

Name: _____ Class: _____

Finger Dislocation Quiz

Instructions: Choose the correct answer.

1. What are the three categories of finger dislocations based on the position of the distal bone relative to the more proximal bone?
 - a) Dorsal, ventral, and medial
 - b) Dorsal, volar, and lateral
 - c) Distal, medial, and proximal
 - d) Ventral, volar, and lateral
2. Which joint allows flexion and extension of the finger and has very little lateral movement due to stabilizing ligaments?
 - a) Proximal interphalangeal (PIP)
 - b) Distal interphalangeal (DIP)
 - c) Metacarpophalangeal (MCP)
 - d) Carpometacarpal (CMC)
3. Which type of dislocation at the proximal interphalangeal (PIP) joint is associated with volar plate, collateral ligament, and dorsal joint capsule injuries?
 - a) Volar dislocation
 - b) Lateral dislocation
 - c) Medial dislocation
 - d) Dorsal dislocation
4. What type of injury is most likely to cause finger dislocations?
 - a) Fractures
 - b) Ligament sprains
 - c) Forced hyperextension or hyperflexion of the digit
 - d) Muscle strains
5. In which sports are finger dislocations most likely to occur?
 - a) Golf, tennis, and swimming
 - b) Soccer, track and field, and volleyball
 - c) Football, rugby, and basketball
 - d) Baseball, hockey, and gymnastics

6. What are the symptoms often associated with a finger dislocation?
 - a) Fever and headache
 - b) Obvious deformity and swelling
 - c) Fatigue and dizziness
 - d) Numbness and blurred vision
7. How is a dorsal dislocation at the proximal interphalangeal (PIP) joint reduced?
 - a) By applying direct pressure over the palmar aspect of the middle phalanx
 - b) By applying gentle traction to the distal phalanx
 - c) By moving the joint into hyperflexion
 - d) By stabilizing the proximal phalanx and applying direct pressure over the dorsal aspect of the middle phalanx
8. What type of dislocation occurs when the proximal phalanx slips below the metacarpal head toward the palmar surface?
 - a) Dorsal dislocation
 - b) Volar dislocation
 - c) Lateral dislocation
 - d) Medial dislocation
9. Why should traction never be applied in a volar or dorsal metacarpophalangeal (MCP) joint dislocation?
 - a) It can damage the bones in the hand
 - b) It can cause excessive lateral movement
 - c) It can pull surrounding soft tissues into the joint and make the dislocation irreducible
 - d) It can lead to nerve compression
10. How long is a volar dislocation of the metacarpophalangeal (MCP) joint typically splinted in extension after reduction?
 - a) 1 week
 - b) 2-3 weeks
 - c) 4-6 weeks
 - d) 6-8 weeks

Name: _____ Class: _____

Finger Dislocation Quiz – Answer Key

1. What are the three categories of finger dislocations based on the position of the distal bone relative to the more proximal bone?
 - a) Dorsal, ventral, and medial
 - b) Dorsal, volar, and lateral**
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 - c) Metacarpophalangeal (MCP)
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3. Which type of dislocation at the proximal interphalangeal (PIP) joint is associated with volar plate, collateral ligament, and dorsal joint capsule injuries?
 - a) Volar dislocation
 - b) Lateral dislocation
 - c) Medial dislocation
 - d) Dorsal dislocation**
4. What type of injury is most likely to cause finger dislocations?
 - a) Fractures
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5. In which sports are finger dislocations most likely to occur?
 - a) Golf, tennis, and swimming
 - b) Soccer, track and field, and volleyball
 - c) Football, rugby, and basketball**
 - d) Baseball, hockey, and gymnastics

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