

Lower Extremity Dislocation Trainer Curriculum



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Curriculum Structure

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

Lesson	Title	Approximate Time
One	Patella Dislocations	65-80 minutes
Two	Ankle Dislocations	65-80 minutes
	Total	2.5-3 hours

Lesson Structure

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

Lesson Sections

The actual lesson follows the overview, which contains some of the sections described below.

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, a game, a demonstration, or a review of previous lesson information. 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 – Patella Dislocations

Lesson Overview

In this lesson, participants are introduced to the causes, assessments, and treatments of patellar dislocations.

Lesson Objectives

After completing this lesson, participants will be able to:

- Understand the causes of patellar dislocations
- Explain how to evaluate a possible patellar dislocation
- Understand how to reduce and treat patellar dislocations

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• <i>Patellar Dislocation K-W-L (Know-Wonder-Learned) Chart</i>	1. Print/photocopy <i>Patellar Dislocation K-W-L (Know-Wonder-Learned) Chart</i> (one per participant).	15-20 minutes
LEARN	• Lower Extremity Dislocation Trainer • <i>Patella Dislocations</i> slide presentation	1. Prepare the <i>Patella Dislocation</i> slide presentation for viewing. 2. Place the Lower Extremity Dislocation Trainer at the front of the room for use and viewing during the presentation.	30-35 minutes
REVIEW	• <i>Patellar Dislocation K-W-L (Know-Wonder-Learned) Chart</i> • <i>Patellar Dislocations Assessment</i> • <i>Patellar Dislocations Assessment – Answer Key</i>	1. Access the <i>Patellar Dislocation K-W-L (Know-Wonder-Learned) Chart</i> provided to participants in the FOCUS lesson. 2. Print/photocopy the <i>Patellar Dislocations Assessment</i> (one per participant).	20-25 minutes

Lesson One – Patella Dislocations

FOCUS: K-W-L Chart

10-15 minutes

Purpose:

Participants will complete the K-W-L chart to engage with the topic, activate prior knowledge, and assess their learning progress during this unit. The chart will be used in the lesson's FOCUS and REVIEW sections.

Materials:

- *Patellar Dislocation K-W-L (Know-Wonder-Learned) Chart*

Facilitation Steps:

1. Distribute a K-W-L chart to each participant.
2. Explain to participants: The acronym K-W-L represents "Know," "Want to Know," and "Learned." The KWL chart consists of three columns, one for each letter, where you can document the following:
 - a. Column 1: Prior knowledge or information you already possess about the topic.
 - b. Column 2: Curiosities or questions you have regarding the topic.
 - c. Column 3: Insights or new knowledge gained after the lesson or assignment.
3. Instruct participants to complete the first two columns (K and W).
 - a. Initiate discussion with participants about what they already know about the topic. Have them write what they already know in the K column.
 - b. Discuss with participants what they want to learn or have them talk in pairs. Then, ask participants to write their questions about the topic in the W column.
4. Now, have participants set the worksheet aside until after the lesson is complete, (see the REVIEW section for instructions to complete the chart).

Name: _____ Class: _____

Patellar Dislocation K-W-L Chart

Directions: Complete the first two columns (*K* & *W*) at the beginning of class. Complete the third column after class.

K	W	L
In this column, list what you already <i>know</i> about patellar dislocations.	In this column, list what you <i>wonder</i> (or would like to know) about patellar dislocations.	In this column, list what you <i>learned</i> about patellar dislocations during today's lesson.

Lesson One – Patella Dislocations

LEARN: Patella Dislocations

30-45 minutes

Purpose:

Participants will view the slide presentation while the instructor introduces them to the causes, evaluation, and treatment of patellar dislocations.

Materials:

- *Patella Dislocations* slide presentation.

Facilitation Steps:

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

Slide 1: Title Slide

Slide 2: Patella Dislocations

Both pictures show a lateral patella dislocation. The left image is an x-ray, and the other an external view of the knee.

Patella dislocations occur when the patella moves or slides out of place.

Slide 3: Types of Patella Dislocations

There are two types of patellar dislocations.

Lateral dislocations occur when the patella moves laterally, toward the outside of the knee. This is the most common type of knee dislocation due to the direction the quadriceps muscles pull.

Medial dislocations occur when the patella moves medially, towards the inside of the knee. This rare dislocation most likely results from a congenital condition or atrophy (deterioration or excessive weakness) of the quadriceps muscles.

Slide 4: Anatomy of the Patella (and surrounding structures)

It is important to note that the patella, femur, and tibia are the three bones that make up the knee joint. The space labeled the trochlear groove (discussed in depth on slides 13-14) is where the patella lies. It acts as a support for the patella's movement during knee flexion and extension.

On the medial portion of the knee, the important structures that may be involved in a patellar dislocation are:

- Vastus medialis oblique (VMO) tendon
- Medial patellofemoral ligament (MPFL)
- Medial patellotibial ligament

The lateral portion of the knee contains the following:

- Vastus lateralis (VL) tendon
- Lateral patellofemoral ligament
- Lateral patellotibial ligament

In the center of the knee, the patella sits in the quadriceps tendon. The ligament from the patella to the tibial tuberosity is the patellar ligament.

Distortion of the normal patellofemoral joint anatomy places the patella at higher risk for instability and dislocation (Hayat, El Bitar, & Case, 2023).

Note: It is essential to ensure that participants understand the difference between a tendon, which connects muscle to bone, and a ligament, which connects bone to bone.

Slide 5: Anatomy of the Patella

The patella is the largest sesamoid bone in the body and is covered in hyaline cartilage. While it is a free-floating bone, it is supported by muscle, bone, and ligamentous structures and lies within the trochlear groove, which also provides support.

Use the Lower Extremity Dislocation Trainer to demonstrate how easily the patella moves because it is a free-floating sesamoid bone. Have participants extend their legs, relax their quadriceps muscles, and gently feel the movement of their own patella.

Slide 6: Static Stabilizers

Three main static stabilizers help to hold the patella in its place. The most important is the medial patellofemoral ligament (MPFL). This ligament provides static restraint for the patella during the 1st 20 degrees of knee flexion, keeping the patella from moving laterally due to the lateral pull of the quadriceps muscles. This ligament is usually torn in a lateral dislocation.

The secondary stabilizing structures of the patella are the medial patellotibial ligament and the trochlear groove.

Slide 7: Dynamic Stabilizers

The dynamic stabilizer of the patella is vastus medialis oblique (VMO). It exerts a medial pull on the patella to maintain correct positioning within the trochlear groove and counteract the pull of the vastus lateralis.

Slide 8: Occurrences

Patella dislocations account for approximately 2-3% of all knee injuries. They are more likely to affect adolescent athletes (ages 10-16). Female athletes are more prone to patellar dislocations than their male counterparts due to

their larger Q-angle (Q-angle will be discussed on slide 13).

Slide 9: Causes

The leading cause of patellar dislocations is typically acute trauma.

This can occur as a non-contact twisting injury to the knee or a direct blow to the medial or lateral aspect of the knee that forces the patella out of its normal position.

The most common mechanism of lateral patellar dislocation is external tibial rotation with the foot fixed on the ground (Hayat, Bitar, & Case, 2022).

Other causes of patellar dislocations include:

- Chronic ligament laxity, especially the MPFL
- Bony malalignment
- A connective tissue disorder
- Other anatomical pathology

Slide 10: Risk Factors

Risk factors predispose an athlete to suffering a patellar dislocation.

Athletes can often suffer a lateral patellar dislocation if they have one of the following risk factors:

- Muscle imbalances
- Large Q-angle
- Trochlear dysplasia
- Patella malalignment
- Previous dislocation

Additional risk factors for medial patellar dislocations include:

- Weakness of the vastus lateralis
- Overly tight or malposition of the MPFL

We will discuss each of these in the following few slides.

Slide 11: Muscular Imbalance

Athletes have an increased risk of lateral dislocations due to imbalances in the muscles of the thigh's anterior compartment. The iliotibial band and lateral retinaculum create an excessive lateral pull on the patella, while a weak VMO does not provide a sufficient counterforce. This allows the patella to dislocate laterally.

An athlete is more susceptible to a medial dislocation if they have vastus lateralis weakness.

Slide 12: Large Q-angle

The Q-angle (quadriceps angle) is formed between the quadriceps muscle and the patella tendon. It is measured by drawing a line from the anterior superior iliac spine (ASIS) through the center of the patella. A second line is drawn from the patella's center to the tibial tubercle. The angle created (see picture on slide) is the Q-angle.

The normal Q-angle is approximately 14 degrees for males and 18 degrees for females. A Q-angle greater than 20 degrees increases the risk of a lateral patellar dislocation.

Slides 13-14: Trochlear Dysplasia

A normal trochlear groove is a concave, V-shaped groove. Its primary purpose is to allow the patella to glide smoothly during flexion and extension of the knee and provide additional stability during this movement.

An abnormal trochlear groove, also called trochlear dysplasia, occurs when the trochlear groove is shallow, flat, or otherwise displaced. This variation in the depth of the groove allows the patella to move medially and laterally more than normal.

On Slide 14, you can see a normal trochlear groove and the four types of trochlear dysplasia. The trochlea may be shallow, flat, have a lateral convexity, or have a cliff. Each of these will reduce the stability of the patella.

Slide 15: Patella Malalignment

Patella malalignment results from translational or rotational deviation of the patella to any axis. The two main types of malalignment that contribute to patellar dislocations are patella alta and patellar tilt.

Patella alta, or high-riding patella, is a condition that can predispose an athlete to a patellar dislocation. This is due to decreased support because the patella sits above the trochlear groove. The pictures show the difference between the location of a normal patella and patella alta.

Excessive patellar tilt is when the patella tilts laterally or medially more than normal. Normal patellar tilt is 0-5°, with any angle greater than 5° considered excessive.

Slide 16: Previous Dislocations

History of previous patellar dislocations will make an athlete more susceptible to recurrent patellar dislocations because of damage to surrounding structures.

The recurrence rate of patellar dislocations is around 15-60%. Following a dislocation, up to 3% of individuals will continue to experience patellar instability.

Slide 17: Patella Dislocation Injury Evaluation Title Slide

Review HOPS (History, Observation, Palpation, and Special Tests) if necessary.

Slide 18: History

- M: Mechanism of Injury – Patients report how the injury occurred
- A: Acute or Chronic? – Patellar dislocations are an acute injury
- P: Pain - Severity, location
- P: Previous Injury? – Is this the patient's first dislocation?
- S: Sounds – Was there any sound/pop when the injury occurred?
- S: Signs and Symptoms – What signs and symptoms are present?

Slide 19: Signs and Symptoms

Patellar dislocations result in severe pain and almost immediate swelling in the front of the knee. The athlete may hear a pop when the knee dislocates, and there will be an obvious deformity as the patella no longer sits in the groove. The athlete will also be unable to extend the knee while the patella is dislocated fully.

Slide 20: Observation

When observing the injury, you should look for deformity, discoloration, and swelling.

The athlete will likely present with obvious deformity and swelling. Depending on the mechanism of injury, some discoloration may be present, but it is not usually present in a patellar dislocation.

Slide 21: Patellar Dislocation Reduction

Show the video on the slide.

The patella can be reduced (moved back into its original position) by applying pressure to the lateral border of the patella while straightening the leg. The patient will likely feel a reduction in pain once the patella is back in its correct position.

Demonstrate how to perform the reduction on the Lower Extremity Dislocation Trainer.

Slide 22: Treatment

Treatment for a patellar dislocation consists of a closed reduction, physical therapy, bracing with a “J” sleeve, and patellar taping.

Physical therapy focuses on strengthening the quadriceps muscles (thigh muscles). Additionally, special knee braces can be used to control the movement of the kneecap. In cases where patients experience significant pain or recurrent dislocations, surgery may be necessary.

Lesson One – Patella Dislocations

REVIEW: K-W-L Chart

10-15 minutes

Purpose:

Participants will complete the K-W-L chart used in the FOCUS section of the lesson.

Materials:

- *Patellar Dislocation K-W-L (Know-Wonder-Learned) Chart*
- *Patellar Dislocations Assessment*

Facilitation Steps:

1. Have participants get out their K-W-L chart used in the FOCUS section.
2. Ask participants if they learned the answers to the questions they had in their W column. Share any “a-ha’s” with the whole group and have participants summarize what they learned in the L column.
Alternatively, have participants list at least three things they learned from the lesson in the L column and turn in their chart. This can also be used as a quick formative assessment of participants’ learning.
3. Distribute the *Patellar Dislocations Assessment* and allow 10 minutes for participants to fill it out.
4. Peer grade, self-check, or have participants hand the assessment in for grading.

Name: _____ Class: _____

Patella Dislocations Assessment

Directions: Circle the correct answer for each of the following questions and statements.

1. What is NOT a typical symptom of patellar dislocation?
 - a. Pain
 - b. Audible pop
 - c. Bruising
 - d. Inability to extend the knee
2. A normal trochlear groove is shallow and flat, allowing the patella to slide easily through flexion and extension.
 - a. True
 - b. False
3. What type of bone is the patella?
 - a. Long
 - b. Short
 - c. Sesamoid
 - d. Irregular
4. The primary static restraint of the patella is the:
 - a. Medial patellotibial ligament
 - b. Vastus medialis oblique
 - c. Medial patellofemoral ligament
 - d. Vastus lateralis
5. A patella dislocation can be reduced by applying pressure to the medial border of the patella while applying pressure laterally.
 - a. True
 - b. False
6. The most common cause of patellar dislocation is:
 - a. Connective tissue disorder
 - b. Patellar malalignment
 - c. Chronic ligamentous laxity
 - d. Acute trauma
7. Which of the following bones are NOT a part of the knee joint:
 - a. Femur
 - b. Tibia
 - c. Fibula
 - d. Patella
8. Female athletes have a larger Q-angle than male athletes do.
 - a. True
 - b. False
9. A lateral dislocation is more common than a medial dislocation.
 - c. True
 - d. False
10. A condition in which the patella sits abnormally high in the trochlear groove:
 - a. Patella baja
 - b. Patella alta
 - c. Patellar tilt
 - d. Dislocated patella

Name: _____ Class: _____

Patella Dislocations Assessment – Answer Key

1. What is NOT a typical symptom of patellar dislocation?
 - a. Pain
 - b. Audible pop
 - c. Bruising**
 - d. Inability to extend the knee
2. A normal trochlear groove is shallow and flat, allowing the patella to slide easily through flexion and extension.
 - a. True
 - b. False**
3. What type of bone is the patella?
 - a. Long
 - b. Short
 - c. Sesamoid**
 - d. Irregular
4. The primary static restraint of the patella is the:
 - a. Medial patellotibial ligament
 - b. Vastus medialis oblique
 - c. Medial patellofemoral ligament**
 - d. Vastus lateralis
5. A patella dislocation can be reduced by applying pressure to the medial border of the patella while applying pressure laterally.
 - a. True
 - b. False**
6. The most common cause of patellar dislocation is:
 - a. Connective tissue disorder
 - b. Patellar malalignment
 - c. Chronic ligamentous laxity
 - d. Acute trauma**
7. Which of the following bones are NOT a part of the knee joint:
 - a. Femur
 - b. Tibia
 - c. Fibula**
 - d. Patella
8. Female athletes have a larger Q-angle than male athletes do.
 - a. True**
 - b. False
9. A lateral dislocation is more common than a medial dislocation.
 - a. True**
 - b. False
10. A condition in which the patella sits abnormally high in the trochlear groove:
 - a. Patella baja
 - b. Patella alta**
 - c. Patellar tilt
 - d. Dislocated patella

Lesson Two – Ankle Dislocations

Lesson Overview

In this lesson, participants will be introduced to the causes, assessments, and emergency care for ankle dislocations.

Lesson Objectives

After completing this lesson, participants will be able to:

- Understand the causes of ankle dislocations
- Explain how to evaluate a possible ankle dislocation
- Understand the emergency care for ankle dislocations

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• <i>Ankle Dislocation Crossword Puzzle</i> • <i>Ankle Dislocation Crossword Puzzle – Answer Key</i>	1. Print/photocopy <i>Ankle Dislocation Crossword Puzzle</i> (one per participant)	15-20 minutes
LEARN	• Lower Extremity Dislocation Trainer • <i>Ankle Dislocation</i> slide presentation	1. Prepare the <i>Ankle Dislocation</i> slide presentation for viewing. 2. Place Lower Extremity Dislocation Trainer at the front of the room for use and viewing during the presentation.	25-35 minutes
REVIEW	• Lower Extremity Dislocation Trainer • <i>Ankle Dislocation Assessment Lab</i> worksheet • <i>Ankle Dislocations Assessment</i> • <i>Ankle Dislocations Assessment – Answer Key</i>	1. Print/photocopy the <i>Ankle Dislocation Assessment Lab</i> worksheet and <i>Ankle Dislocations Assessment</i> (one of each per participant). 2. Have participants get into groups of two to four.	25-30 minutes

Lesson Two – Ankle Dislocations

FOCUS: Ankle Dislocation Crossword Puzzle

15-20 minutes

Purpose:

Participants will complete a crossword puzzle to review keywords that will be seen throughout the lesson.

Materials:

- *Ankle Dislocation Crossword Puzzle*
- *Ankle Dislocation Crossword Puzzle – Answer Key*

Facilitation Steps:

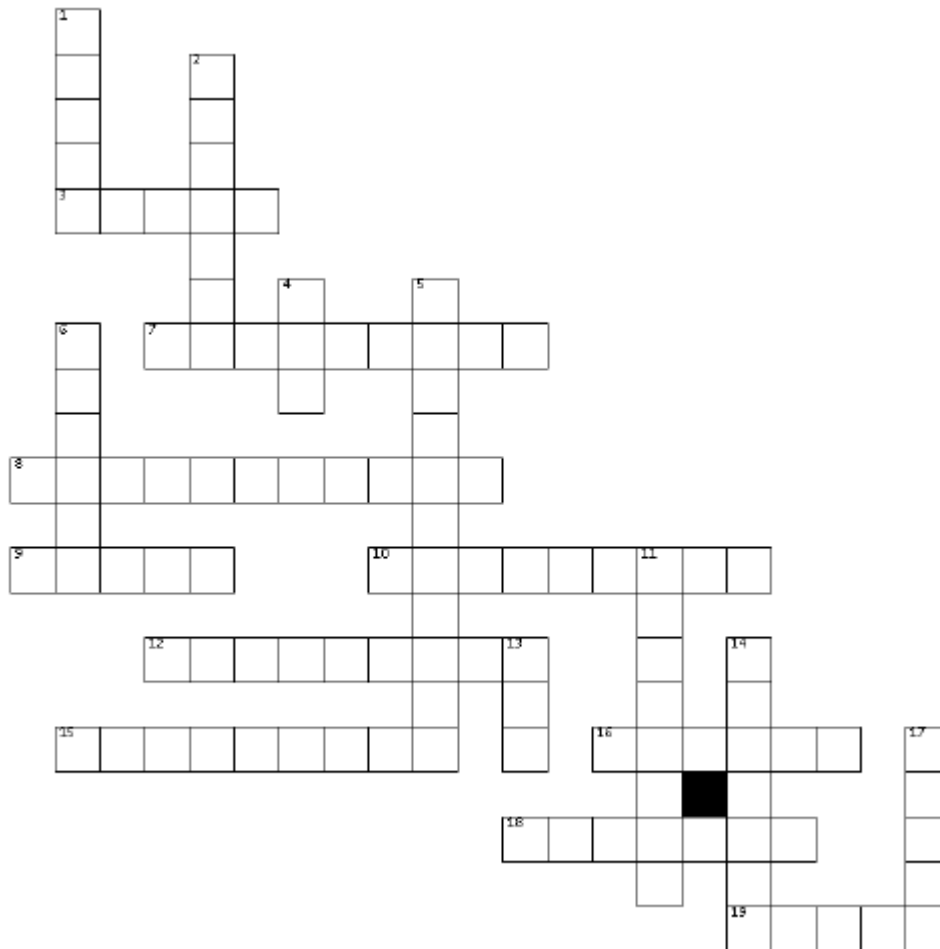
1. Provide each participant with a copy of the *Ankle Dislocation Crossword Puzzle*.
2. Instruct participants that you will set a timer for five minutes. They should complete as much of the crossword puzzle as possible during this time using their previous knowledge.
3. After the five minutes are up, instruct participants to pair up with a participant near them to complete the remainder of the puzzle with their combined knowledge.

Note: You may choose to allow them to use any available resources at this time or have them leave the ones they don't know blank.

4. Set another five-minute timer to allow participants to work together.
5. After the time, review each keyword using the answer sheet to ensure the participants understand the material well.

Ankle Dislocation Crossword Puzzle

Instructions: Use the clues to fill in the words below. Words can go across or down. Letters are shared when the words intersect.



ACROSS

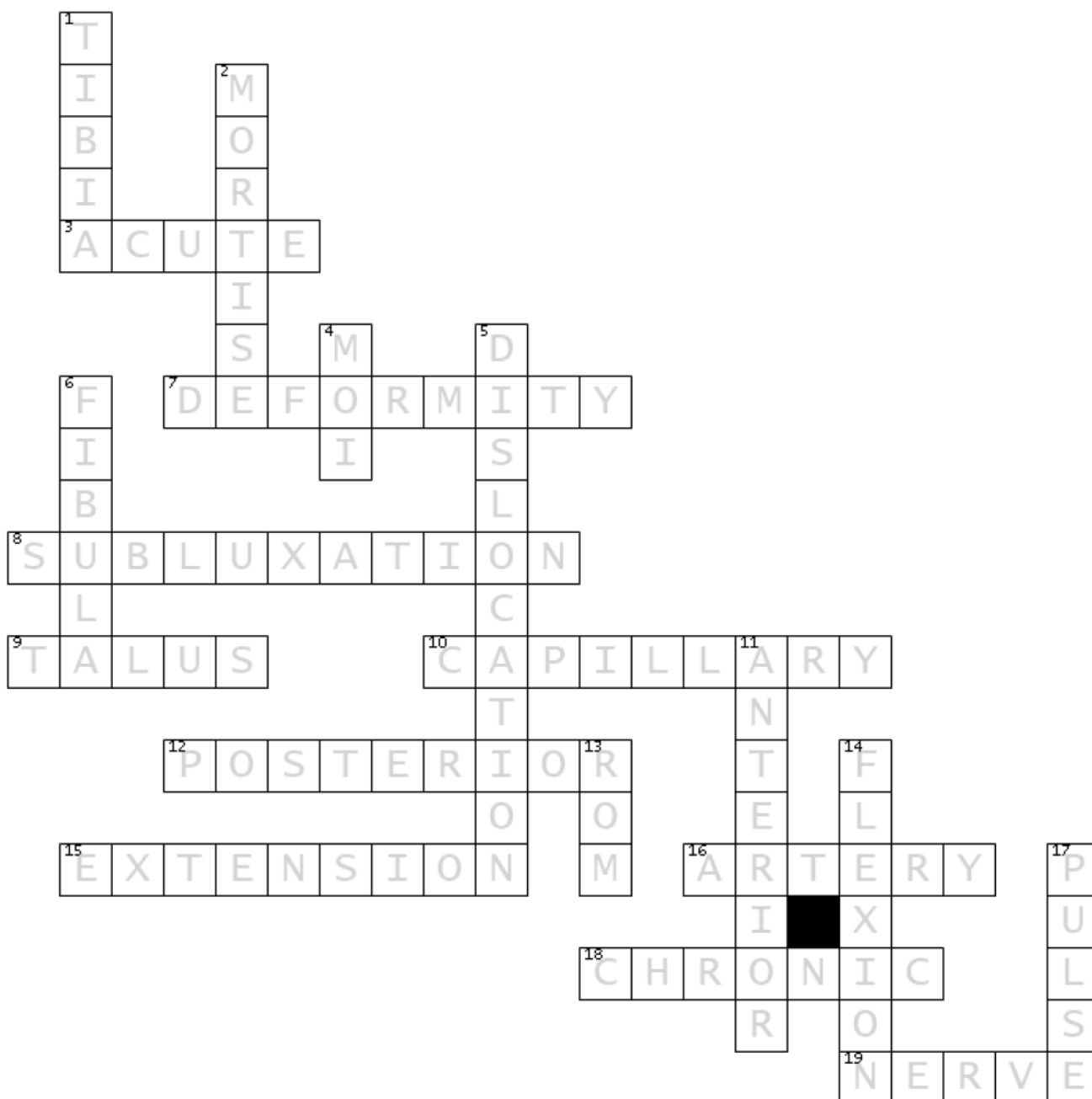
3. New injury
7. Abnormality in the musculoskeletal makeup
8. Incomplete or partial dislocation of a joint
9. Bone that makes up the lower part of the ankle joint
10. Refill, time taken for color to return to an external capillary bed after pressure is applied to cause blanching
12. Back
15. Distance that the joint can extend
16. Blood vessels that distribute oxygen-rich blood to your entire body
18. Older or longer-lasting injury
19. Clusters of cells, called neurons, that send electrical signals throughout the body sensation, physical condition, or experience resulting from the stimulation of one of the sense organs

Lower Extremity Dislocation Trainer Curriculum

DOWN

1. The main and larger bone in the lower leg
2. Rectangular socket
4. Mechanism of injury
5. A separation of two bones where they meet at a joint
6. The lateral and smaller bone in the lower leg
11. Front
13. Range of motion
14. The bending capacity of joints
17. Location where it is possible to feel blood flow in the body

Ankle Dislocation Crossword Puzzle – Answer Key



Lesson Two – Ankle Dislocations

LEARN: Ankle Dislocations

30-45 minutes

Purpose:

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

Materials:

- *Ankle Dislocations* slide presentation.

Facilitation Steps:

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

Slide 1: Title Slide

Slide 2: Dislocated Ankle

A dislocated ankle is a medical emergency due to the potential for neurovascular damage. An ankle dislocation occurs when there is an abnormal separation between the talo-tibial joint.

Slide 3: Mechanism of Injury

Acute ankle dislocations are typically caused by a high-energy trauma that causes ankle plantar flexion combined with inversion or eversion stress.

Ankle dislocations occur most often in sports (31%) and motor vehicle accidents (30%). These injuries typically occur in men and teenage boys but are rarely seen in young children.

Individuals with a prior history of ankle fractures or sprains have an increased risk of ankle dislocation.

Slide 4: The Ankle

First, let's review some anatomy. The ankle joint is a very stable joint due to its bony structure and is designed for weight bearing.

There are three joints in the ankle: the talocrural, subtalar, and inferior tibiofibular joints. When discussing ankle dislocations, we

will focus on the talocrural or the true ankle joint.

The image is of the true ankle joint or talocrural joint and the bones that make up the joint. This is described in more detail on the next slide.

Slide 5: Talocrural Joint (True Joint)

The talocrural joint is the true joint of the ankle, comprised of the tibia, fibula, and talus. It is a three-sided box-like joint, called a mortise, classified as a hinge joint. It is responsible for the motion of dorsiflexion and plantarflexion of the ankle.

Note the image with arrows to the talus and true ankle joint (bracket-shaped socket).

Slide 6: Lateral Ankle Ligaments

Ankle dislocations tear multiple ligaments, causing the joint to be unstable. Three groups of ligaments maintain the stability of the ankle: the tibiofibular syndesmosis, the deltoid ligament, and the lateral collateral ligaments. These ligaments collaboratively limit motion, provide support, and act to resist inversion.

Use the diagram to review the ligaments of the ankle with participants.

Slide 7: Arterial Supply

The ankle's blood supply comes from the malleolar branches of the anterior tibial, posterior tibial, and fibular arteries.

Use the diagram to identify the posterior tibial artery and the dorsalis pedis artery of the ankle with participants.

Slide 8: Nerve Supply

The nerves that innervate the ankle are the tibial, superficial fibular, and deep fibular nerves. If the ankle is dislocated, it is essential to determine the presence or absence of distal circulation, sensation, and movement.

Slide 9: Types of Dislocations

Ankle dislocations are classified as either type 1 or type 2. Type 1 is an ankle dislocation without a fracture, while type 2 is a dislocation with a fracture. It is much more likely to have a fracture-dislocation (type 2) than a dislocation alone (type 1).

Dislocations can occur in multiple directions, including anterior, posterior, medial, lateral, and superior. We will focus on anterior and posterior dislocations only.

Slide 10: Ankle Dislocation Without Fracture

The image is of an x-ray of an open dislocation. The mechanism of injury was a high flip off a trampoline and impact with the ground. The ankle was in plantar flexion and an inverted position upon impact. This was an open dislocation.

Slide 11: Posterior Dislocation

A posterior ankle dislocation is the most common type of ankle dislocation.

In this dislocation, the talus moves backward in relation to the distal tibia. The forces that occur in this type of dislocation drive the foot back while the anterior talus wedges into the joint space, causing a widening of the joint. The ankle is typically in plantar flexion during this injury.

There is a greater risk of injury to the posterior tibial nerve and the surrounding vascular structures in a posterior ankle dislocation.

Slide 12: Anterior Dislocations

An anterior dislocation occurs when the talus is pushed forward in relation to the tibia. The foot remains fixed, and a posterior force is applied to the tibia. Typically, the ankle is in dorsiflexion when this injury occurs.

An anterior dislocation increases the risk of the dorsalis pedis artery being damaged.

Slide 13: Signs and Symptoms

Ankle dislocations are marked by severe pain, immediate swelling, and deformity of the ankle or foot. Often numbness, weakness, and pale or cold skin are associated with these injuries if the surrounding neurovascular structures are damaged.

Slide 14: Assessment

Ankle dislocations are typically associated with an obvious deformity of the ankle or foot. The direction of the foot in relation to the ankle mortise must be noted.

Assessment of the skin and neurovascular status is critical. The clinician needs to assess the pulse at the dorsal pedis and posterior tibial arteries, the capillary refill, and the skin sensation of the dorsal and plantar surface of the foot.

The patient's ability to flex and extend the toes should also be assessed.

Slide 15: Dorsalis Pedis Artery

To assess the pulse at the dorsal pedis artery, place the fingers just lateral to the extensor tendon of the great toe. The observer should note the pulse's intensity, rate, and rhythm.

Slide 16: Posterior Tibial Pulse

Place the fingers just behind and slightly below the medial malleolus to assess the posterior tibial pulse. Again, the observer should note the pulse's intensity, rate, and rhythm.

Slide 17: Assessing Pulses in the Foot

Show the short video on assessing the dorsal pedis and posterior tibial pulse.

Slide 18: Ankle Dislocation and Reduction

Show the video on an ankle fracture reduction, stopping the video to review the x-rays and point out the dislocation technique, reassessment, and splinting of the ankle.

Slide 19: Anterior Ankle Dislocation Reduction

This reduction is best performed with two people and should only be performed after x-rays have been taken.

To reduce an anterior ankle dislocation, place the patient supine with a slightly flexed knee to relax the gastrocnemius and soleus muscles.

One practitioner will grasp the forefoot with one hand and the heel of the foot with the other and place the foot into dorsiflexion.

With one person holding counter-traction on the leg, the person holding the foot will apply direct

traction to the foot and heel to extend the leg and move the foot and talus back into location between the tibia and fibula.

Demonstrate this maneuver on the Lower Extremity Dislocation Trainer.

Slide 20: Posterior Ankle Dislocation Reduction

Place the patient in a supine position with the knee flexed. With one person holding counter-traction, grasp the heel with one hand and the forefoot with the other. Slightly plantarflex the foot to disengage the talus and apply traction to the leg, extending the leg while sliding the talus anteriorly into position.

For this maneuver, it may be necessary for a third person to apply downward pressure on the tibia and fibula while the foot is being pulled forward into position.

Demonstrate this maneuver on the Lower Extremity Dislocation Trainer.

Slide 21: Post-Reduction Care

After reducing the dislocation, verifying sensation, pulses, capillary refill, and movement of the toes is crucial. Correct anatomical alignment should also be verified using post-reduction X-rays.

A posterior splint or U-shaped splint should be applied to support the ankle. After splinting, recheck the movement of the toes, pulses, and capillary refill.

Lesson Two – Ankle Dislocations

REVIEW: Ankle Dislocation Injury Assessment and Reduction Lab

25-30 minutes

Purpose:

Participants will practice assessing the foot and ankle pulses and reduce anterior and posterior ankle dislocations using the Lower Extremity Dislocation Trainer.

Materials:

- Lower Extremity Dislocation Trainer
- *Ankle Dislocation Assessment Lab*
- *Ankle Dislocation Assessment*
- *Ankle Dislocations Assessment – Answer Key*

Facilitation Steps:

1. Provide each participant with a copy of the lab worksheet.
2. Have participants work in pairs or groups to practice the ankle tests on each other as listed on the worksheet.
3. Each pair/group should rotate through performing the special tests on the Lower Extremity Dislocation Trainer to practice each reduction technique and receive a sign-off from the instructor once the participant has demonstrated proficiency.
4. Distribute the *Ankle Dislocations Assessment* and allow 10 minutes for participants to complete it.
5. Peer grade, self-check, or have participants hand the assessment in for grading.

Name: _____ Class: _____

Ankle Dislocation Assessment Lab

1. Perform each test below on two to three people and record the results in the table below.

Each pulse should be counted for 10 seconds. Record the number of beats per minute in the box. Note if the pulse is weak or strong. For capillary refill, record how long it takes them to refill with oxygen-rich blood. Foot color and temperature are recorded as below-normal, normal, and above normal.

Test	Practice 1	Practice 2	Practice 3
Dorsal Pedis Pulse			
Posterior Tibial Pulse			
Capillary Refill			
Foot Color			
Foot Temperature			

2. Using the Lower Extremity Dislocation Trainer, practice reducing both an anterior and posterior ankle dislocation.

Reduction Technique	Practice 1	Practice 2	Instructor Sign-off
Anterior Dislocation Technique			
Posterior Dislocation Technique			

Name: _____ Class: _____

Ankle Dislocation Assessment

Instructions: Circle the correct answer for each of the following questions.

1. Which ankle dislocation is the most common?
 - a. Anterior
 - b. Posterior
 - c. Medial
 - d. Lateral
2. When performing the posterior dislocation reduction, the foot should be placed in which position?
 - a. Dorsiflexion
 - b. Plantarflexion
 - c. Inversion
 - d. Eversion
3. The talocrural joint is referred to as the true ankle joint.
 - a. True
 - b. False
4. The practitioner should always assess pulses before and after reduction and splinting to ensure good vascular status.
 - a. True
 - b. False
5. The talocrural joint involves all of the following bones EXCEPT:
 - a. Tibia
 - b. Calcaneus
 - c. Fibula
 - d. Talus
6. The dorsalis pedis artery is assessed on the posterior aspect of the ankle.
 - a. True
 - b. False
7. When performing an anterior ankle dislocation, the foot should be placed into which position?
 - a. Dorsiflexion
 - b. Plantarflexion
 - c. Inversion
 - d. Eversion
8. All of the following should be assessed before and after reduction, EXCEPT:
 - a. Movement of the ankle
 - b. Pulses
 - c. Capillary refill
 - d. Sensation
9. The ankle joint is a three-sided, box-like hinge joint responsible for inversion and eversion of the ankle.
 - a. True
 - b. False
10. Ankle dislocations occur from high-energy trauma, which typically occurs in (choose all that apply):
 - a. Sports injuries
 - b. Women
 - c. Very young children
 - d. Car accidents

Ankle Dislocations Assessment – Answer Key

Instructions: Circle the correct answer for each of the following questions.

1. Which ankle dislocation is the most common?
 - a. Anterior
 - b. Posterior**
 - c. Medial
 - d. Lateral
2. When performing the posterior dislocation reduction, the foot should be placed in which position?
 - a. Dorsiflexion
 - b. Plantarflexion**
 - c. Inversion
 - d. Eversion
3. The talocrural joint is referred to as the true ankle joint.
 - a. True**
 - b. False
4. The practitioner should always assess pulses before and after reduction as well as after splinting to ensure good vascular status.
 - a. True**
 - b. False
5. The talocrural joint involves all of the following bones EXCEPT:
 - a. Tibia
 - b. Calcaneus**
 - c. Fibula
 - d. Talus
6. The dorsalis pedis artery is assessed on the posterior aspect of the ankle.
 - a. True
 - b. False**
7. When performing an anterior ankle dislocation, the foot should be placed into which position?
 - a. Dorsiflexion**
 - b. Plantarflexion
 - c. Inversion
 - d. Eversion
8. All of the following should be assessed before and after reduction, EXCEPT:
 - a. Pulses
 - b. Capillary Refill
 - c. Sensation
 - d. Movement of the ankle**
9. The ankle joint is a three-sided, box-like hinge joint responsible for inversion and eversion of the ankle.
 - a. True
 - b. False**
10. Ankle dislocations occur from high-energy trauma, which typically occurs in (choose all that apply):
 - a. Sports injuries**
 - b. Women
 - c. Very young children
 - d. Car accidents**

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