

Introduction to Immobilizing and Splinting Techniques



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About the Author



Krista Wenz has been a Licensed Paramedic for 34 years. She holds a bachelor's degree in Fire Safety Management and worked 23 years as a Firefighter-Paramedic for a large Metropolitan Fire Department in California. Krista has extensive knowledge in Emergency Medicine, including experience as an Adjunct Instructor at community and private colleges teaching Emergency Medical Technician (EMT) and Paramedic students. She has additional experience working as a Mental Health Technician in a psychiatric ward and emergency crises, Drill-Instructor and Field Training Officer for multiple agencies, CPR, First-Aid, PALS, BLS, and ALS instructor, and EMS Captain for a rural Fire Department. Now retired from the Fire Service, Krista is passionate about passing on knowledge and experience for those interested in entering into the emergency medical pre-hospital field.



Introduction to Immobilizing and Splinting Techniques Curriculum

This curriculum and accompanying Closed Fracture Training Manikin and/or Splints and Braces Supply Pack will help participants learn proper immobilization and splinting skills. Participants will learn how to immobilize the following: closed radius/ulna fracture, closed tibia/fibula fracture, compound femur fracture, and jaw trauma. They will familiarize themselves with the different types of splints and braces.

Curriculum Structure

The *Introduction to Immobilization and Splinting Techniques* curriculum is composed of the following lessons. Approximate lesson times are included.

Lesson	Title	Approximate Time
One	Joint and Long Bone	2 hours
Two	Spinal Immobilization	2 hours
	Total	4 hours

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.

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 review of previous lesson information, or a 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 – Joint and Long Bone

Lesson Overview

In this lesson, participants will learn how to immobilize the following: closed radius/ulna fracture, closed tibia/fibula fracture, compound femur fracture, and jaw trauma. They will familiarize themselves with the different types of splints and braces.

Pre-Lesson Knowledge

- Basic anatomy
- Signs and symptoms of a fracture and joint injuries
- Use of personal protective equipment
- Proper patient care and documentation

Lesson Objectives

After completing this lesson, participants will be able to:

- Define open and closed fractures
- Demonstrate joint injury and splinting techniques
- Demonstrate how to immobilize a jaw injury
- Demonstrate immobilization and splinting of specific long bone fractures

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• <i>Joint and Long Bone (Focus on Empathy)</i> worksheet • <i>Joint and Long Bone (Focus on Empathy)</i> Instructor Resource • <i>Joint and Long Bone Pre-test</i> • <i>Joint and Long Bone Pre-test – Answer Key</i>	1. Print/photocopy the <i>Joint and Long Bone (Focus on Empathy)</i> worksheet and <i>Joint and Long Bone Pre-test</i> (one per participant)	20 minutes
LEARN	• <i>Joint and Long Bone Techniques</i> slide presentation • Closed Fracture Training Manikin • Splints and Braces Supply Pack	1. Prepare the <i>Joint and Long Bone Techniques</i> slide presentation for viewing	30 minutes
REVIEW	• <i>Joint and Long Bone Techniques</i> slide presentation • Closed Fracture Training Manikin • Splints and Braces Supply Pack • <i>Joint and Long Bone Post-test</i> • <i>Joint and Long Bone Post-test – Answer Key</i>	1. Print/photocopy the <i>Joint and Long Bone Post-test</i> (one per participant)	60 minutes

Instructor Note: Focus activities may also be completed prior to class.

Lesson One – Joint and Long Bone

FOCUS: Developing Awareness of Patient-Focused Care

20 minutes

Purpose:

To help participants develop an awareness of patient-focused care. Take the *Joint and Long Bone* pre-test.

Materials:

- *Joint and Long Bone (Focus on Empathy)* worksheet
- *Joint and Long Bone (Focus on Empathy)* Instructor Resource
- *Joint and Long Bone Pre-test*
- *Joint and Long Bone Pre-test – Answer Key*

Facilitation Steps:

1. Distribute the *Joint and Long Bone (Focus on Empathy)* worksheet prior to or at the beginning of class.
2. Have the *Joint and Long Bone (Focus on Empathy)* Instructor Resource available.
3. Pair up participants and have them complete the *Joint and Long Bone (Focus on Empathy)* worksheet.
4. Distribute the *Joint and Long Bone Pre-test* and have the participants complete it.
5. Either collect the pre-test or have participants self-correct, using the *Joint and Long Bone Pre-test – Answer Key* as a resource.

Joint and Long Bone (Focus on Empathy)

Skill: Immobilization and Splinting of a closed radius/ulna fracture

READ the following:

It's a slow Saturday afternoon when your EMS unit receives a call from dispatch, asking you to respond to a possible fractured arm call at a local baseball field. When you arrive on the scene, you are directed by a group of people to the dugout, where you find an 8-year-old boy crying and holding his right forearm to his chest. You notice obvious deformity and swelling to his ulna, and it is reported that a fastball hit his arm as he tried to catch it. There are no other injuries. The coach informs you that the boy's parents are not present, but he called them at work and they are on their way. You assist your partner with immobilizing the boy's arm and start the evaluation of your patient. While splinting the boy's arm and providing comfort, his mother arrives and tells you that she does not want you to provide further care and to stop touching her son. You explain what happened and that you are providing care and trying to make her son as comfortable as you can. His mother tells you that their religion does not allow medical treatment and that you can leave now.

REFLECT on the situation:

How do you think the EMS personnel would feel in a situation where medical treatment is refused based on religious beliefs?

How do you think the crowd would feel after seeing a young boy get injured and his mother refusing treatment?

What is the best way to handle the situation with the boy and his mother?

SHARE your thoughts with a peer when it's discussion time.

Joint and Long Bone (Focus on Empathy)

Instructor Resource

Skill: Immobilization and Splinting of a closed radius/ulna fracture

READ the following:

It's a slow Saturday afternoon when your EMS unit receives a call from dispatch, asking you to respond to a possible fractured arm call at a local baseball field. When you arrive on the scene, you are directed by a group of people to the dugout, where you find an 8-year-old boy crying and holding his right forearm to his chest. You notice obvious deformity and swelling to his ulna, and it is reported that a fastball hit his arm as he tried to catch it. There are no other injuries. The coach informs you that the boy's parents are not present, but he called them at work and they are on their way. You assist your partner with immobilizing the boy's arm and start the evaluation of your patient. While splinting the boy's arm and providing comfort, his mother arrives and tells you that she does not want you to provide further care and to stop touching her son. You explain what happened and that you are providing care and trying to make her son as comfortable as you can. His mother tells you that their religion does not allow medical treatment and that you can leave now.

REFLECT on the situation:

How do you think the EMS personnel would feel in a situation where medical treatment is refused based on religious beliefs?

Confused and frustrated while trying to understand and respect the family's religious beliefs.

How do you think the crowd would feel after seeing a young boy get injured and his mother refusing treatment?

I think they would feel angry and confused as to why the mother would not want help for her injured son.

What is the best way to handle the situation with the boy and his mother?

I would explain that her son is in a lot of pain with a possible broken arm and that he needs to see a doctor. If she still refuses, I would call the base hospital and have her speak with medical control.

SHARE your thoughts with a peer when it's discussion time.

Name: _____ Class: _____

Joint and Long Bone Pre-test

Select the best answer to the following multiple-choice questions:

1. What is another name for an **open** fracture?
 - a. Spiral fracture
 - b. Simple fracture
 - c. Compound fracture
 - d. Greenstick fracture
2. How do you immobilize a fracture or joint injury?
 - a. Support directly under the injury
 - b. Support the joints only above the injury
 - c. Support the joints above and below the injury
 - d. Support the joints only below the injury
3. Which is a contraindication when using a traction splint for a femur fracture?
 - a. Hip fracture
 - b. Knee fracture
 - c. Ankle or foot fracture
 - d. All of the above
4. When is it appropriate to push a bone back into place with a compound fracture?
 - a. When there is a large amount of blood loss
 - b. When your partner tells you to
 - c. Never
 - d. When it will provide pain relief
5. When do you assess for distal pulses, sensation, and circulatory function?
 - a. Before applying a splint
 - b. After applying a splint
 - c. Never
 - d. Both a and b

Joint and Long Bone Pre-test – Answer Key

1. What is another name for an **open** fracture? *Refer to slide 4*
 - a. Spiral fracture
 - b. Simple fracture
 - c. **Compound fracture**
 - d. Greenstick fracture
2. How do you immobilize a fracture or joint injury? *Refer to slide 5*
 - a. Support directly under the injury
 - b. Support the joints only above the injury
 - c. **Support the joints above and below the injury**
 - d. Support the joints only below the injury
3. Which is a contraindication when using a traction splint for a femur fracture? *Refer to slide 13*
 - a. Hip fracture
 - b. Knee fracture
 - c. Ankle or foot fracture
 - d. **All of the above**
4. When is it appropriate to push a bone back into place with a compound fracture? *Refer to slide 4*
 - a. When there is a large amount of blood loss
 - b. When your partner tells you to
 - c. **Never**
 - d. When it will provide pain relief
5. When do you assess for distal pulses, sensation, and circulatory function? *Refer to slide 9*
 - a. Before applying a splint
 - b. After applying a splint
 - c. Never
 - d. **Both a and b**

Lesson One – Joint and Long Bone

LEARN: Joint and Long Bone Slide Presentation

30 minutes

Purpose:

Participants will receive a thorough introduction to open and closed fractures, joint immobilization and splinting techniques, immobilizing a jaw injury, and specific long bone injuries with proper immobilization skills.

Materials:

- *Joint and Long Bone Techniques* slide presentation
- Closed Fracture Training Manikin (if available)
- Splints and Braces Supply Pack (if available)

Facilitation Steps:

Share the following information as you show the slide presentation.

Slide 1: Introduction slide.

Slide 2: Prerequisite knowledge for this lesson:

- The signs and symptoms of a fracture and a joint injury
- Basic anatomy
- Personal protective equipment
- Proper patient care and documentation

Slide 3: When dealing with a compound fracture, it is important to never touch the exposed bone or try to push it back into place. If there is bleeding, apply pressure to stop it and cover the exposed bone with a bandage before splinting.

Slide 4: When arriving on the scene, manually stabilize the injury from the joint above and below the injury to help alleviate pain and discomfort.

Slide 5: The exception to taking time and correctly splinting is if the patient needs rapid transport. The ABCs are always more important than splinting or immobilizing an injury in a critical situation. Newer studies have shown that it may be necessary to NOT splint in the position

found and try to manipulate the injury into the correct anatomical position for a better recovery outcome. However, other scientific studies show that this may cause more harm in an emergency setting and to only manipulate when necessary to regain pulses and circulation.

Slide 6: Padding the splint is important, but do not over-pad, as doing so may cause more discomfort for the patient. Ice packs can be re-applied every 10-15 minutes, but never directly to bare skin.

Slide 7 and 8: Every EMS provider carries a variety of splints and immobilization devices. The most common are padded boards, rigid splints, gauze, and triangular bandages. The EMT should familiarize him- or herself with the splints and immobilization supplies their employer provides. *Show what types of splints you have in your training kit and how to use them.*

Slide 9: Oftentimes, a patient will have loose or missing teeth associated with a jaw injury. If they are conscious, have the patient try to spit any blood out of their mouth before bandaging. If the bandage is slipping off the patient's head, another bandage can be applied across the forehead and tied behind the head to hold the first bandage in place.

Slide 10: These are the requirements that the National Registry of Emergency Medical Technicians lists for their skills assessment. While the definition of joint immobilization recommends immobilizing above and below the **joint**, the NREMT uses the word **bone** in their skills test.

Slide 11: Because of the strong force required to break the radius or ulna in the middle of the bone, it is more common for adults to break both bones during a forearm injury. When only one bone in the forearm is broken, it is typically the ulna,

usually as a result of a direct blow to the outside of the arm when it is raised in self-defense.

If you hold your arms at your side with your palms facing up, the ulna is the bone closest to your body and the radius is closest to your thumb. The ulna is larger at the elbow; it forms the point of the elbow, and the radius is larger at the wrist. After immobilizing the fracture, place a roll of gauze in the patient's hand to minimize the movement of their fingers.

Slide 12: Tibia fractures vary greatly depending on the force that causes the break. The pieces of bone may line up correctly (stable fracture) or be out of alignment (displaced fracture).

Slide 13: Femur fractures are one of the most painful fractures a patient can have. This injury can cause a patient to go into shock because of the large amount of blood loss (typically 1500-2000 ml). Motor vehicle accidents are the number one cause of femur fractures.

Slide 14: Traction splints are contraindicated if there is a pelvic fracture, knee fracture, a distal femur fracture, ankle or foot fracture, or partial amputation. It is required to have intact bones to support the strap sites. When applying a traction splint, be aware of the patient's genitalia when resting the saddle against the ischial tuberosity. Do not place the strap directly over the injury, especially with a compound fracture. Do not place the strap directly over the knee. Instead, always place it above and below the knee. When applying traction, 10% of the patient's body weight is recommended, but it may take up to 15% for proper relief. Use the patient's pain reduction as a guide.

Lesson One – Joint and Long Bone

REVIEW: Practice and Assessment of Joint and Long Bone Immobilization and Splinting Techniques

60 minutes

Purpose:

Participants will get hands-on practice with splinting and immobilization procedures.

Materials:

- *Joint and Long Bone Techniques* slide presentation
- *Joint and Long Bone Post-test*
- *Joint and Long Bone Post-test – Answer Key*
- Closed Fracture Training Manikin
- Splints and Braces Supply Pack

Facilitation Steps:

1. **Slide 5 and 6:** Have participants:
 - a. Practice immobilizing an injury above and below the joint
 - b. Demonstrate how to identify the proper splint that is needed and measure for accurate length
 - c. Add padding to a splint and apply the splint, adding more padding to fill voids
 - d. Demonstrate how to apply wrapped ice packs, avoiding contact with bare skin
2. **Slide 9:** Have participants properly demonstrate how to immobilize a jaw injury.
3. **Slide 10:** Have participants demonstrate the steps needed to immobilize a long bone injury.
 - a. Don proper personal protective equipment
 - b. Manually stabilize the injury
 - c. Assess distal motor, sensory, and circulatory functions in the injured extremity
 - d. Select the proper splint and any bandaging supplies needed
 - e. Immobilize the site of the injury
4. **Slide 11:** Have participants demonstrate how to immobilize a radius or ulna fracture.
 - a. Place a splint under the forearm
 - b. Support the forearm with a sling or tape it to the arm just below the wrist and above the elbow
 - c. Avoid placing ties directly over the injured area
 - d. Fasten the splint tightly enough to hold the body part still, but not so tight that the ties will cut off the person's circulation
5. **Slide 12:** Have participants demonstrate immobilization of a tibia or fibula fracture.
 - a. Place a splint under the leg
 - b. Tie or tape the splint to the leg, just below the knee and above the ankle
 - c. Avoid placing ties directly over the injured area
 - d. Fasten the splint tightly enough to hold the body part still, but not so tight that the ties will cut off the person's circulation
6. **Slide 13:** Have the participants demonstrate how they would control bleeding in a compound femur fracture.
7. **Slide 14:** Have participants demonstrate how to immobilize a compound femur fracture using a traction splint.
 - f. Immobilize the bone above the injured extremity
 - g. Immobilize the bone below the injured extremity
 - h. Secure the entire injured extremity
 - i. Reassess distal motor, sensory, and circulatory functions in the injured extremity

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- a. Position the splint between the patient's legs, resting the saddle against the ischial tuberosity (the sit-bones)
 - b. Attach the strap to the thigh
 - c. Secure the ankle strap snugly
 - d. Gently extend the inner shaft until the desired amount of traction is achieved (approximately 10% of the patient's body weight)
 - e. Adjust the thigh/leg/foot strap
 - f. Reassess neurovascular function
8. Have participants complete the *Joint and Long Bone Post-test*
9. Use the *Joint and Long Bone Post-test – Answer Key* as needed for instructor reference.
10. Collect the tests to grade or have students pair up and compare answers.

Name: _____ Class: _____

Joint and Long Bone Post-test

Select the best answer to the following multiple-choice questions:

1. What is another name for an **open** fracture?
 - a. Spiral fracture
 - b. Simple fracture
 - c. Compound fracture
 - d. Greenstick fracture
2. How do you immobilize a fracture or joint injury?
 - a. Support directly under the injury
 - b. Support the joints only above the injury
 - c. Support the joints above and below the injury
 - d. Support the joints only below the injury
3. Which is a contraindication when using a traction splint for a Femur fracture?
 - a. Hip fracture
 - b. Knee fracture
 - c. Ankle or foot fracture
 - d. All of the above
4. When is it appropriate to push a bone back into place with a compound fracture?
 - a. When there is a large amount of blood loss
 - b. When your partner tells you to
 - c. Never
 - d. When it will provide pain relief
5. When do you assess for distal pulses, sensation, and circulatory function?
 - a. Before applying a splint
 - b. After applying a splint
 - c. Never
 - d. Both a and b

Joint and Long Bone Post-test – Answer Key

1. What is another name for an **open** fracture? *Refer to slide 4*
 - a. Spiral fracture
 - b. Simple fracture
 - c. **Compound fracture**
 - d. Greenstick fracture
2. How do you immobilize a fracture or joint injury? *Refer to slide 5*
 - a. Support directly under the injury
 - b. Support the joints only above the injury
 - c. **Support the joints above and below the injury**
 - d. Support the joints only below the injury
3. Which is a contraindication when using a traction splint for a Femur fracture? *Refer to slide 13*
 - a. Hip fracture
 - b. Knee fracture
 - c. Ankle or foot fracture
 - d. **All of the above**
4. When is it appropriate to push a bone back into place with a compound fracture? *Refer to slide 4*
 - a. When there is a large amount of blood loss
 - b. When your partner tells you to
 - c. **Never**
 - d. When it will provide pain relief
5. When do you assess for distal pulses, sensation, and circulatory function? *Refer to slide 9*
 - a. Before applying a splint
 - b. After applying a splint
 - c. Never
 - d. **Both a and b**

Lesson Two – Spinal Immobilization

Lesson Overview

In this lesson, participants will learn how to perform spinal immobilization on a supine patient and spinal immobilization on a seated patient. They will learn how to accurately measure a cervical collar and logroll a patient.

Pre-Lesson Knowledge

- Basic anatomy
- When spinal immobilization is indicated
- Use of personal protective equipment and BSI procedures
- Proper patient care and documentation

Lesson Objectives

After completing this lesson, participants will be able to:

- Demonstrate how to measure a cervical collar
- Demonstrate how to logroll a patient
- Demonstrate spinal immobilization on a supine patient
- Demonstrate spinal immobilization on a seated patient

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• <i>Spinal Immobilization (Focus on Empathy)</i> worksheet • <i>Spinal Immobilization (Focus on Empathy) Instructor Resource</i> • <i>Spinal Immobilization Pre-test</i> • <i>Spinal Immobilization Pre-test – Answer Key</i>	1. Print/photocopy the <i>Spinal Immobilization (Focus on Empathy)</i> worksheet and <i>Spinal Immobilization Pre-test</i> (one per participant)	20 minutes
LEARN	• <i>Spinal Immobilization</i> slide presentation • Closed Fracture Training Manikin (if available) • Splints and Braces Supply Pack (if available) • Chair for seated spinal immobilization • Backboard (if available) • Extrication Device (if available)	1. Prepare <i>Spinal Immobilization</i> slide presentation for viewing	30 minutes
REVIEW	• <i>Spinal Immobilization</i> slide presentation • <i>Spinal Immobilization Post-test</i> • <i>Spinal Immobilization Post-test – Answer Key</i> • Closed Fracture Training Manikin (if available) • Splints and Braces Supply Pack (if available) • Chair for seated spinal immobilization • Backboard (if available) • Extrication Device (if available)	1. Prepare <i>Spinal Immobilization</i> slide presentation for viewing 2. Print/photocopy the <i>Spinal Immobilization Post-test</i> (one per participant)	60 minutes

Instructor Note: Focus activities may also be completed prior to class.

Lesson Two – Spinal Immobilization

FOCUS: Developing Awareness of Patient-Focused Care

20 minutes

Purpose:

To help participants develop an awareness of patient-focused care. Take the *Spinal Immobilization Pre-test*.

Materials:

- *Spinal Immobilization (Focus on Empathy)* worksheet
- *Spinal Immobilization (Focus on Empathy)* Instructor Resource
- *Spinal Immobilization Pre-test*
- *Spinal Immobilization Pre-test – Answer Key*

Facilitation Steps:

1. Distribute the *Spinal Immobilization (Focus on Empathy)* worksheet prior to or at the beginning of class.
2. Have the *Spinal Immobilization (Focus on Empathy)* Instructor Resource available.
3. Pair up participants and have them complete the *Spinal Immobilization (Focus on Empathy)* worksheet.
4. Have participants pair up after completion and share answers from the worksheet.
5. Distribute the *Spinal Immobilization Pre-test* and have participants complete it.
6. Either collect the pre-test or have participants self-correct, using the *Spinal Immobilization Pre-test – Answer Key* as a resource.

Spinal Immobilization (Focus on Empathy)

Skill: Spinal Immobilization on a supine patient

READ the following:

You and your partner are dispatched to a local skate park for an unknown medical emergency. You arrive at the scene and notice a group of teenage boys huddled around a person who is lying on the ground. Taking BSI precautions, you approach the patient and ask what happened, while immediately going to his head to hold manual stabilization. The patient is a 13-year-old boy who said he went down the skate ramp and lost control, hitting his head on the pavement as he landed. He was not wearing a helmet and did not lose consciousness. One of the boys tells you that he is the patient's older brother and asks if he can help. You ask him to call their parents and have them come to the scene. While your partner measures the patient for the proper cervical collar size (c-collar), the brother asks if there is anything else he can do to help. He tells you that his father told him it was his responsibility to ensure that his younger brother wears his safety gear, but they wanted to look "cool," so they weren't wearing helmets. He is visibly upset and remorseful. You and your partner are alone on this call, and you can use some help with the backboard and logrolling the patient. You ask the brother and one other boy if they can help as you instruct them on what they will be doing.

REFLECT on the situation:

How do you think the older brother is feeling?

Why do you think the EMT asked the boys for their assistance?

Do you think it was a good idea for the EMT to ask for assistance?

How do you think the parents will react when they arrive on the scene?

SHARE your thoughts with a peer when it's discussion time.

Spinal Immobilization (Focus on Empathy)

Instructor Resource

Skill: Spinal Immobilization on a supine patient

READ the following:

You and your partner are dispatched to a local skate park for an unknown medical emergency. You arrive at the scene and notice a group of teenage boys huddled around a person who is lying on the ground. Taking BSI precautions, you approach the patient and ask what happened, while immediately going to his head to hold manual stabilization. The patient is a 13-year-old boy who said he went down the skate ramp and lost control, hitting his head on the pavement as he landed. He was not wearing a helmet and did not lose consciousness. One of the boys tells you that he is the patient's older brother and asks if he can help. You ask him to call their parents and have them come to the scene. While your partner measures the patient for the proper cervical collar size (c-collar), the brother asks if there is anything else he can do to help. He tells you that his father told him it was his responsibility to ensure that his younger brother wears his safety gear, but they wanted to look "cool," so they weren't wearing helmets. He is visibly upset and remorseful. You and your partner are alone on this call, and you can use some help with the backboard and logrolling the patient. You ask the brother and one other boy if they can help as you instruct them on what they will be doing.

REFLECT on the situation:

How do you think the older brother is feeling?

Guilt for not having his brother wear a helmet; anxiety not knowing the extent of his brother's injuries and how his father will react; sadness that his brother is injured.

Why do you think the EMT asked the boys for their assistance?

It will help the older brother direct his attention to something helpful and useful by putting him to work. The EMT asked for another boy to help because spinal immobilization is best done using four people.

Do you think it was a good idea for the EMT to ask for assistance?

I think it was a good idea because they need assistance to maintain proper spinal immobilization, and it helps the boys feel useful.

How do you think the parents will react when they arrive on the scene?

I think the parents will be scared and confused about the situation and the procedures that are being done to their son. I think the father will be angry with the boys for not wearing their helmets, but will be happy that his son is conscious and talking with him.

SHARE your thoughts with a peer when it's discussion time.

Name: _____ Class: _____

Spinal Immobilization Pre-test

Select the best answer to the following multiple-choice questions:

1. How do you measure for the proper cervical collar size?
 - a. Ask the patient their pants size
 - b. Use four fingers to measure their neck
 - c. Measure from the chin to the sternum
 - d. Use two fingers to measure their neck
2. What is an extrication device?
 - a. A device that maintains spinal immobilization from a seated position
 - b. A device that maintains spinal immobilization from a supine position
 - c. A device that maintains spinal immobilization from a prone position
 - d. None of the above
3. When is it indicated to provide spinal immobilization on a patient?
 - a. Falls
 - b. Diving accidents
 - c. Motorcycle accidents
 - d. All of the above
4. How do you apply a cervical collar?
 - a. Start at the back of the neck and work towards the chin
 - b. Have your partner stop manual stabilization to apply the collar
 - c. Start with the chin first and wrap around the neck
 - d. Have the patient apply it
5. When you logroll a patient, who counts and decides when it is time to roll as a unit?
 - a. The person at the head
 - b. The person at the shoulders
 - c. The person at the waist
 - d. The person at the feet

Spinal Immobilization Pre-test – Answer Key

1. How do you measure for the proper cervical collar size? *Refer to slide 5*
 - a. Ask the patient their pants size
 - b. Use four fingers to measure their neck**
 - c. Measure from the chin to the sternum
 - d. Use two fingers to measure their neck
2. What is an extrication device? *Refer to slide 7*
 - a. A device that maintains spinal immobilization from a seated position**
 - b. A device that maintains spinal immobilization from a supine position
 - c. A device that maintains spinal immobilization from a prone position
 - d. None of the above
3. When is it indicated to provide spinal immobilization on a patient? *Refer to slide 4*
 - a. Falls
 - b. Diving accidents
 - c. Motorcycle accidents
 - d. All of the above**
4. How do you apply a cervical collar? *Refer to slide 9*
 - a. Start at the back of the neck and work towards the chin
 - b. Have your partner stop manual stabilization to apply the collar
 - c. Start with the chin first and wrap around the neck**
 - d. Have the patient apply it
5. When you logroll a patient, who counts and decides when it is time to roll as a unit? *Refer to slide 10*
 - a. The person at the head**
 - b. The person at the shoulders
 - c. The person at the waist
 - d. The person at the feet

Lesson Two – Spinal Immobilization

LEARN: Spinal Immobilization Slide Presentation

30 minutes

Purpose:

Participants will receive a thorough introduction to properly measuring a cervical collar, how to logroll a patient, and how to provide spinal immobilization on a supine and seated patient.

Materials:

- *Spinal Immobilization Techniques* slide presentation
- Closed Fracture Training Manikin (if available)
- Splints and Braces Supply Pack (if available)
- Chair for seated spinal immobilization
- Backboard (if available)
- Extrication Device (if available)

Facilitation Steps:

Share the following information as you show the slide presentation.

Slide 1: Introduction slide to Spinal Immobilization

Slide 2: Prerequisite knowledge for this lesson:

- Indications of when to use spinal immobilization
- Basic anatomy
- Personal protective equipment
- BSI procedures
- Proper patient care and documentation

Slide 3: Have the participants give examples of other types of accidents or situations that would call for spinal immobilization.

Slide 4: There are rigid cervical collars (c-collars) and soft collars. This lesson only refers to the rigid collars, since that is what is used in the prehospital setting. There are many different types of rigid collars manufactured. It is the EMT's responsibility to familiarize themselves with the brand of collar their company carries once they are working for an EMS provider.

Sizes are made for both adults and children.

Choosing the correct size is extremely important, as applying the wrong size of collar can cause more harm than good.

Slide 5: "Full spinal precautions" is a term used in the pre-hospital setting. It describes a patient who has a cervical collar applied and is placed on a backboard with straps to hold the body and head in line with the spine.

"C-spine precautions" and "c-spine" are terms used in the field, but do not refer only to the c-collar. They refer to full spinal precautions. For example, an EMS provider may report to the hospital that their patient is in c-spine.

Each agency uses different terminology, so use what is appropriate for the provider you work for.

Slide 6: Short boards are approximately half the length of a long backboard and are used to extricate a patient from a vehicle. Every EMS provider carries a variety of immobilization devices. The most common device is the Kendrick Extrication Device (K.E.D.), but there are other brands that are similar. The EMT should familiarize themselves with the immobilization devices that their employer provides. There may not be an extrication device available for this demonstration. If an extrication device is not available, students can verbalize the steps that they would take to apply one.

Slide 7 and 8: When securing the straps, make sure the straps are tight enough to support the patient, but not so tight that they can't breathe. The EMTs will need to familiarize themselves with the straps and head blocks that their company carries.

Slide 9: If the wrong size of collar is chosen and it does not fit properly, a different size collar will need to be applied. It is extremely important that the patient's head is maintained in a neutral, in-

line position at all times. You will need two people to perform this procedure.

Slide 10: Logroll is a term used to roll a patient onto their side while maintaining proper spine alignment. This is best performed with **four** people. It can be used to check the patient's backside for injuries, to roll a patient who is in the prone position (face down) into the supine (face up) position, or to place a backboard under the patient to secure spinal immobilization.

Place emphasis on the different positions that a patient can be found in. Focus on the prone and supine positions for this lesson. If there are additional rescuers to assist, another person can put the backboard into place and check the backside for injuries in step 5. Stress the importance of the rescuer at the head directing the others at their count.

Slide 11: Spinal immobilization needs a minimum of four people to be done correctly. The person who manually stabilizes the head must stay in that position until the head is taped down.

Slide 12: Spinal immobilization of a seated patient needs a minimum of two people to be done correctly. The person who manually stabilizes the head must stay in that position until the head is taped to the extrication device.

Lesson Two – Spinal Immobilization

REVIEW: Practice and Assessment of Spinal Immobilization Techniques

60 minutes

Purpose:

Participants will practice measuring for a correctly-sized cervical collar, how to logroll a patient, and how to provide spinal immobilization on both supine and seated patients. Once the practice and assessment are complete, a post-test will be given.

Materials:

- *Spinal Immobilization Techniques* slide presentation
- *Spinal Immobilization Post-test*
- *Spinal Immobilization Post-test – Answer Key*
- Closed Fracture Training Manikin (if available)
- Splints and Braces Supply Pack (if available)

Facilitation Steps:

1. **Slide 4:** Have participants practice measuring a patient for the proper cervical collar size. Demonstrate how to measure with your fingers alongside the patient's neck.
2. **Slide 5:** Have participants look over the backboard (if one is available) and note where the straps are or where they could be applied to the board. If a backboard is not available, look at the slide and point out the different locations of the straps and how they would be used to secure a patient.
3. **Slide 6:** If an extrication device is available, have participants familiarize themselves with the it. If an extrication device is not available, point out the different straps on the slide and how they would be applied to a patient.
4. **Slide 7:** Have participants familiarize themselves with the different bandages that are supplied with the training kits and how they can be used if there are no straps available to use on the backboard.
5. **Slide 8:** Have participants demonstrate the application of the cervical collar on both supine and seated patients.
6. **Slide 9:** Have participants demonstrate this procedure step by step in four-person teams. Make sure that the person holding manual traction at the head is the one in charge of directing the logroll on their count. If a backboard is not available, have them simulate the use of the backboard and proper strap placement.
7. **Slide 10:** The same steps as slide 9. Have participants demonstrate this procedure step by step with a four-person team. Make sure that the person holding manual traction at the head is the one in charge of directing the logroll on their count. If a backboard is not available, have them simulate the use of the backboard and proper strap placement.
8. **Slide 11:** Have participants demonstrate this procedure using a chair. Have them go step by step in a two-person team. If an extrication device is not available, have them simulate the use of one utilizing proper strap placement.
9. Have participants complete the *Spinal Immobilization Post-test*.
10. Use the *Spinal Immobilization Post-test – Answer Key* as needed for instructor reference.
11. Collect the tests to grade or have students pair up and compare answers.

Name: _____ Class: _____

Spinal Immobilization Post-test

Select the best answer to the following multiple-choice questions:

1. How do you measure for the proper-sized cervical collar?
 - a. Ask the patient their pants size
 - b. Use four fingers to measure their neck
 - c. Measure from the chin to the sternum
 - d. Use two fingers to measure their neck
2. What is an extrication device?
 - a. A device that maintains spinal immobilization from a seated position
 - b. A device that maintains spinal immobilization from a supine position
 - c. A device that maintains spinal immobilization from a prone position
 - d. None of the above
3. When is it indicated to provide spinal immobilization on a patient?
 - a. Falls
 - b. Diving accidents
 - c. Motorcycle accidents
 - d. All of the above
4. How do you apply a cervical collar?
 - a. Start at the back of the neck and work towards the chin
 - b. Have your partner stop manual stabilization to apply the collar
 - c. Start with the chin first and wrap around the neck
 - d. Have the patient apply it
5. When you logroll a patient, who counts and decides when it is time to roll as a unit?
 - a. The person at the head
 - b. The person at the shoulders
 - c. The person at the waist
 - d. The person at the feet

Spinal Immobilization Post-test – Answer Key

1. How do you measure for the proper-sized cervical collar? *Refer to slide 5*
 - a. Ask the patient their pants size
 - b. Use four fingers to measure their neck**
 - c. Measure from the chin to the sternum
 - d. Use two fingers to measure their neck
2. What is an extrication device? *Refer to slide 7*
 - a. A device that maintains spinal immobilization from a seated position**
 - b. A device that maintains spinal immobilization from a supine position
 - c. A device that maintains spinal immobilization from a prone position
 - d. None of the above
3. When is it indicated to provide spinal immobilization on a patient? *Refer to slide 4*
 - a. Falls
 - b. Diving accidents
 - c. Motorcycle accidents
 - d. All of the above**
4. How do you apply a cervical collar? *Refer to slide 9*
 - a. Start at the back of the neck and work towards the chin
 - b. Have your partner stop manual stabilization to apply the collar
 - c. Start with the chin first and wrap around the neck**
 - d. Have the patient apply it
5. When you logroll a patient, who counts and decides when it is time to roll as a unit? *Refer to slide 10*
 - a. The person at the head**
 - b. The person at the shoulders
 - c. The person at the waist
 - d. The person at the feet

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