



**COLLAR**  
THE CERVICAL SPLINT



## **TRAINING MANUAL**

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Founded By Emergency Care Responders



## **Introduction**

The ***XCOLLAR The Cervical Splint*** is not just another cervical stabilization device; it is the most valuable and versatile tool in your spinal immobilization tool kit.

As you read through this train-the-trainer manual you will learn how to train others in the use of the ***XCOLLAR The Cervical Splint*** in a variety of application scenarios. But, more importantly, you will also teach them that the XCOLLAR will save critical time while simultaneously providing unique and unequaled stabilization of the cervical spinal area.

Safe, effective, and simple to use, the XCOLLAR's innovative "splint" design allows EMS providers to stabilize critical c-spine injured patients with unprecedented range of motion restriction in all planes of movement. That is why the XCOLLAR is the most valuable and versatile spinal injury medical device available today, especially in the following settings:

- ⊗ Unique Fit: The XCOLLAR is custom-fit to the patient's unique body type, thereby giving proper c-spine protection.
- ⊗ Pediatric to Large Adult Usage: The XCOLLAR's unique design allows rescuers to treat patients in an unprecedented range of body sizes from approx 30lbs (13kg) to over 350lbs (160kg).
- ⊗ In-Position Application: The XCOLLAR's patented design enables patient stabilization in a non-neutral position. This allows the patient to be immobilized in the position found, negating a movement to neutral position.
- ⊗ Extrication Incidents: The XCOLLAR provides a higher level of interim care during an extrication where full c-spine precautions are not possible until the patient is fully removed.
- ⊗ Technical Rescue Incidents: In high angle rope rescue, confined space rescue, and trench collapse scenarios, the XCOLLAR and NEXSPLINT (compact version of the XCOLLAR) allow rescuers to make rapid, unparalleled c-spine stabilization as soon as patient contact is made.
- ⊗ Multi-victim Incidents: This new tool acts as a "force multiplier" allowing extra needed hands to work on additional patients by effectively initiating adequate spinal immobilization on many patients in a shorter time.

As you instruct others in the use of ***XCOLLAR The Cervical Splint*** and guide students through the orientation and manipulation skills, the many advantages and innovations of the XCOLLAR will be **"sure to impress."**<sup>1</sup> The XCollar and NeXsplint are **"...truly a milestone in the evolution of cervical spine care,"**<sup>2</sup> according to *EMS Magazine*, and you will begin to see why this bold statement was made.

<sup>1</sup> Hildwine, Fran (2007, October). Hands On. *JEMS Magazine*, column 2 3.

<sup>2</sup> Smith, Mike (2009, January). EMS Expo Top Innovation Awards. *EMS Magazine*, 38(1), 70.



## **Training Curriculum**

**Objective:** At the conclusion of training, each EMT shall have sufficient knowledge to effectively place the XCOLLAR on a simulated injured patient. Placement shall include neutral, “in position” found and supine application.

In keeping with DOT Standards, the application of this cervical collar is a psychomotor skill. There are three psychomotor skill levels, indicated with a “P.” P1 indicates that the rescuer has “knowledge” of the skill. P2 indicates that “application” is understood. Finally, P3 indicates that the rescuer has the ability to “problem solve.”

Level P2 rescuers must be fully competent in the application of the collar in all patient positions. This will be the field training level. After this level of training has been achieved, the rescuer shall be able to apply the XCOLLAR within 1 minute.

P3 indicates that the rescuer is able to problem solve, improvise, repair, and teach all aspects of the XCOLLAR. This will be the “train-the-trainer” level.

## **Overview of Training**

**Preparation:** Prior to training, each EMT should review the XCOLLAR Application Manual and view the training DVD. Training will closely follow the manual and it can be used as an adjunct to training.

**Presentation:** The XCOLLAR is a new cervical stabilization device that ensures a higher standard of care by providing a significant reduction in cervical spinal movement and manipulation. The XCOLLAR works as a splint— capturing areas above and below the cervical spine thus immobilizing it. The XCOLLAR promises to revolutionize the care of all trauma patients needing cervical immobilization.

**Application:** The foregoing pages are dedicated solely to applying the XCOLLAR in three patient positions. Teaching tips have been included to facilitate ease of use and clarifications.

**Evaluation (Field Level):** Prior to use all students shall be P2 level trained and capable of application within 1 minute.

**Evaluation (Train-the-Trainer Level):** Prior to becoming an XCOLLAR Training Instructor, all students shall be P3 trained and capable of application within 45 seconds.

## **P2 Level Training**

**Materials Needed:** XCOLLAR, Application Manual, DVD and respective agency’s collar.

### **Suggested Training Methodology:**

The XCOLLAR requires approximately 15 minutes of training for proficient field use. As with most EMS tools, hands-on training is vital. It is suggested that the trainer familiarize the student with a demonstration. Next, the student should apply the collar multiple times, or until confident in their abilities. Finally, the student should verbally demonstrate application. This is the “see one, do one, teach one” concept.



## **I. Orientation to Parts of the XCollar (follows Application Manual)**

- A. Back Support
  - a. Back Extension
  - b. Buckle and Buckle Strap
  - c. Right Side Strap
  - d. XSTRAPS
- B. Chin Support
  - a. Color Coded Velcro
  - b. Chin Strap
  - c. Buckle Receiver
  - d. XSTRAP Guides
- C. Adjustable Chest Support
  - a. Locking Buttons
  - b. Push Tabs



## **II. Basic Review of Advantages**

This section is designed to grab the attention of the student. This is essentially a review of existing collars' limitations while emphasizing the superiority of the XCOLLAR:

- ⊗ Greater degree of immobilization: Refer to initial studies and explain that a comparison will be conducted during the training.
- ⊗ Immobilizes in position found: Explain “in position found” or Position of Comfort” as other than in-line neutral and anatomical position.
- ⊗ Fits an unprecedented range of patient sizes: From pediatric to large adults.
- ⊗ Custom fit to the patient: No longer will rescuers need to manipulate a patient to fit a collar.



### **III. Basic Overview of Application and Placement**

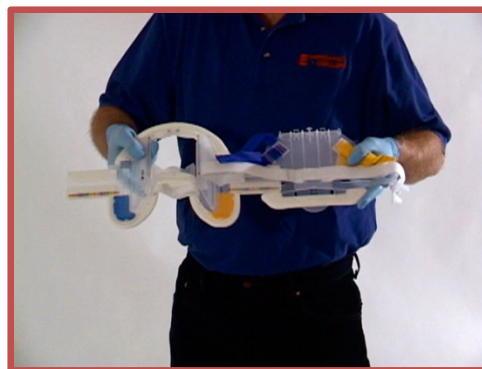
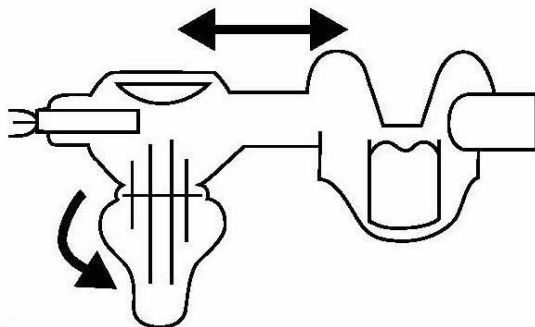
This section is designed to immediately allay fears and keep the training simple. Continual referral to these three steps is paramount.

- A. Deploy: Extend XCOLLAR, unfold and lock the Back Support.
- B. Custom Fit: Wrap the XCOLLAR around the patient, maintain Chin Strap positioned in front of chin and connect buckle. Adjust both side straps to tighten and extend Chest Support down to rest securely on the patient's chest.
- C. Splint: Apply the colored XSTRAPS (Blue and Yellow) by exerting tension and place under the chin, through the XSTRAP guides. Finally, secure them to corresponding color Velcro tabs.

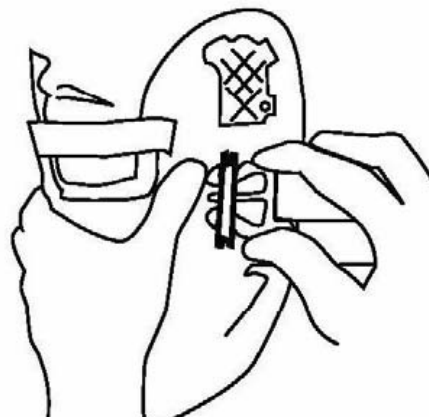
***Teaching Tip: Reiterate that local protocols must be followed, and that in order to minimize patient's manipulation opposing forces must be used as the technique in every step of the application process. Remember this is not a c-collar. It is a Cervical Spinal Splint, a new full Immobilization System.***

### **IV. Neutral Position Application**

- A. DEPLOY
  - 1. Have student remove the collar from the plastic bag.
  - 2. Extend the collar lengthwise.
  - 3. Unfold the Back Support and lock it in place.



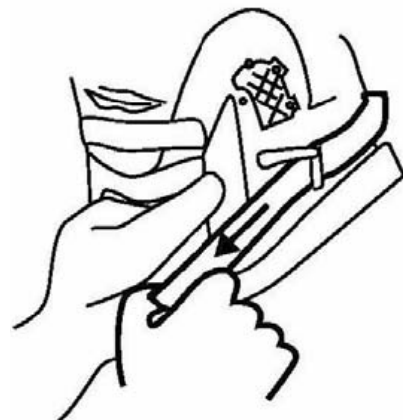
- B. CUSTOM FIT
  - a. Place the XCOLLAR behind the patient's back, encircling them, and connect the buckle.
  - b. The XCOLLAR should be placed as close to the skin as possible. If the patient is lying down and clothes are not removed, the rescuer should pinch and tighten the clothing close to the device, so the XCOLLAR slides into the area of the back between the shoulder blades.



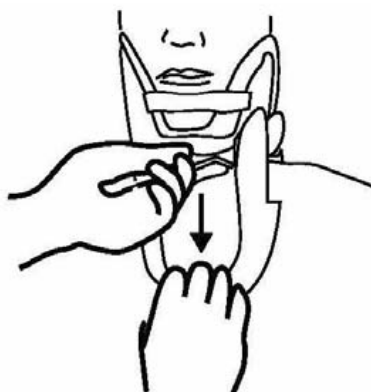


**Teaching Tip: The student may wish to place a simple bend in the front portion of the XCOLLAR for placement. It's preferred to work from the patient's left side to visualize placing the buckle into the receiver.**

- c. Place Chin Support padding directly under the patient's chin and ensure that the Chin Strap is placed in front of the chin below the lower lip. Maintain this position to ensure that the collar is placed squarely on the chin.
  - i. For extra large patients, the rescuer may need to loosen the Chin Strap.
  - ii. For very small patients, the Chin Strap may need to be tightened.
- d. Adjust both side straps.
  - i. Pull firmly on the side strap while initiating opposing pressure on the XCOLLAR. One hand should pull on the strap while the second hand pushes, opposing the forces.



**Teaching Tip: Do not initially over-tighten the Side Strap. The goal is to have the student place the XCOLLAR on the patient symmetrically. Over-tightening one side can make the collar fit asymmetrically. The Side Strap can be readjusted later.**



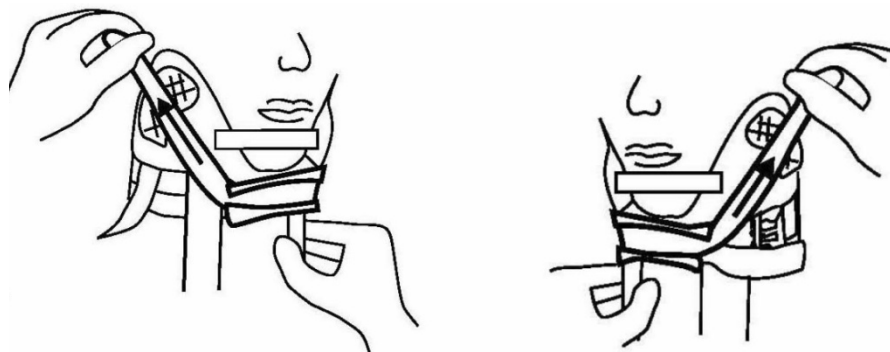
- e. Extend and lock Adjustable Chest Support.
  - i. This part of the collar is designed to place pressure on the area below the clavicles. Correct fit should place the Chest Support just below the clavicles and on the manubrium (the upper part of the sternum).
- f. There are two methods of lowering the Adjustable Chest Support: 1) Utilize the push tabs on each side of the collar. 2) Push down on the center of the Adjustable Chest Support while holding opposing pressure on the chin piece.
- g. Secure the locking buttons by pinching them.

#### C. SPLINT

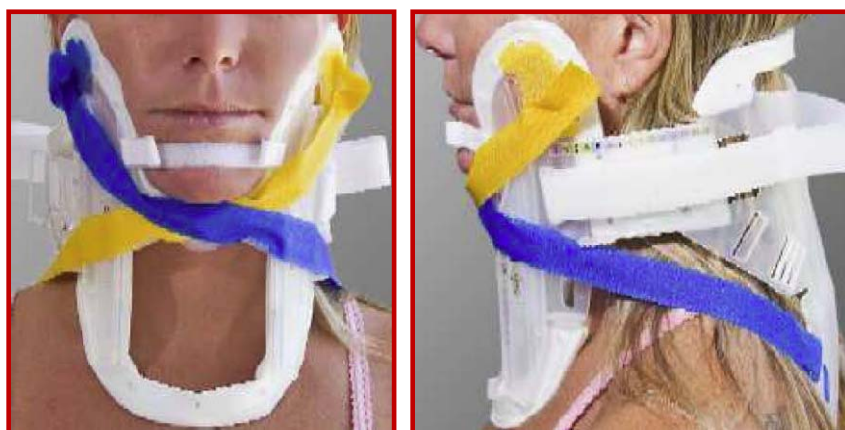
- a. Attach XSTRAPS. The rescuer can begin with either strap. Pull the first XSTRAP up and out of the retainer, wrap the strap around the patient allowing the strap to rest directly below the patient's chin and between the guides on the front of the XCOLLAR. Attach XSTRAP to its corresponding colored Velcro tab. Ensure opposing pressure by simultaneously pushing on the Adjustable Chest Support.
- b. Repeat with other side XSTRAP.

**Teaching Tip: The best way to attach the XSTRAPS is to use a "cross-hand method." For example: The right (blue) XSTRAP should be secured using the student's right hand. The left hand should hold opposing pressure while the right hand pulls tension and secures the XSTRAP to the corresponding Velcro tab.**





The XCOLLAR is now completely secured to the patient and should look like this:



### **Additional Issues:**

***Teaching Note: Airway management should follow all training standards and local protocols.***

1. Airway: The XCOLLAR is an excellent tool to obtain a fast secured airway; it provides excellent upper and lower airway access.
  - a. If there is an unstable traumatic airway incident after the XCOLLAR has been applied, take the following steps:
    1. Loosen the Chin Strap. (Most problems can be solved by this simple maneuver.)
    2. Loosen the XSTRAPS
    3. Loosen the side straps
  - b. Do not remove the XCOLLAR. At this point one rescuer should perform the Jaw Thrust Maneuver while a second medic obtains airway access. After a successful airway has been obtained, tighten XCOLLAR to secure the airway.
    - a. If the above fails, remove the collar if necessary.
2. Obese Patients: The XCOLLAR fits a broad range of patients. Patients in excess of 350 lbs. (160kg) have been fit-tested in the XCOLLAR. However, occasionally rescuers may respond to patients who will require a different application method. A simple change in the application will greatly assist the rescuer.
  - a. When preparing to attach the Buckle Side Strap, simply loosen the strap, connect the buckle and then tighten the strap by reattaching the Velcro.



## **V. “In Position” Application**

***Teaching Note: Current U.S. DOT (Department of Transportation) standards state that a patient in need of c-spine precautions should have their head returned to anatomical neutral position. If the patient experiences increased pain during manipulation, the rescuer should stop movement and keep the patient in the position found. The “In Position” method is used when a patient’s head is of alignment and must be kept in the position found.***

The XCOLLAR is initially placed on the patient using the same method as Neutral Position.

### **A. DEPLOY**

1. Remove the XCOLLAR from the plastic bag.
2. Extend the XCOLLAR lengthwise.
3. Unfold the Back Support and lock it in place.

### **B. CUSTOM FIT**

1. Place the XCOLLAR behind the patient’s head, encircling them, and connect the buckle. Adjust both side straps. Slide the collar into the area of the back between the shoulder blades.
2. While encircling the patient with the collar, check chin area for proper placement.
3. Secure the buckle.



***Teaching Tip: A general rule is that the straps should first be secured on the side the patient is facing or turned towards.***

4. First, adjust the side strap on the side the patient is facing. Use the same method of loosening and attaching the Velcro. This side may be adjusted to its smallest setting. This ensures that tension is placed on the collar, thereby not allowing the neck to move toward midline.

***Teaching Tip: Remind student to use opposing pressure while securing all straps.***

5. Adjust the second side strap. Tighten until tension is felt. The collar will obviously not be symmetrical. However, this fit is required to keep the head in the position found.
6. Extend and lock Adjustable Chest Support. Either method of extending the chest support downward is acceptable. The goal is to have the support fit on the patient’s chest. One side will have to be pushed down more than the other. Show student both methods. Ensure that the chest support has full contact with the patient’s manubrium.

### **C. SPLINT**

1. Attach XSTRAPS: First attach XSTRAP on the side the patient is facing.
2. Next, attach the second XSTRAP. Utilize opposing pressure to attach each strap.



## **VI. Supine Position Application**

***Teaching Note: This method of placement largely follows the Neutral or “In Position” method.***

- A. Placement of the Back Support: Hold the Back Support firmly from the top center when sliding it in place using an angular motion utilizing the gap between the shoulder blades. Show student how to bring the collar in from a superior and lateral position relative to the patient.
- B. All further steps for XCOLLAR placement are the same as for the neutral position.

***Teaching Tip: For the Supine “In Position” method, a rescuer may prefer to deploy the XSTRAPS before adjusting the side straps. Demonstrate these methods of loosening the XSTRAPS:***

- 1. Reach to the sides of the patient’s neck to deploy the XSTRAPS.***
- 2. Adjust the side straps as needed and continue with normal application.***

## **VII. XCOLLAR Removal**

1. Release XSTRAPS.
2. Release tension on the buckle side strap.
3. Unlock the buckle.
4. Remove the XCOLLAR.

***Note to Students: The XCOLLAR represents a significant advancement in c-spine care. Not all EMS/Hospital providers have seen this Cervical Splinting System. Please use every opportunity to educate personnel in the use, adjustability, and removal of the XCOLLAR.***

## **P3 Level Training**

- P3 training level assumes P2 proficiency.
- P3 training emphasizes knowing all the parts of the XCOLLAR thoroughly.
- P3 training requires repeated placement of the XCOLLAR using multiple patient positions.
- The trainer must be able to adequately place the XCOLLAR on a simulated patient within one minute.



## **SKILLS APPLICATION: NEUTRAL POSITION PLACEMENT**

Start Time: \_\_\_\_\_

Stop Time: \_\_\_\_\_

Date: \_\_\_\_\_

Candidate's Name: \_\_\_\_\_

Evaluator's Name: \_\_\_\_\_

	Points Possible	Points Awarded
Takes or verbalizes, body substance isolation (BSI).	1	
If two rescuers, one applies manual stabilization of the cervical spine	1	
Encircles the patient with the XCOLLAR and connects buckle side strap	1	
Ensures correct fit under patient's chin with chin strap in place	1	
Tightens buckle side strap without over tightening it	1	
Tightens right side strap and checks for symmetry, readjusts both straps if needed	1	
Extends and locks Adjustable Chest Support	1	
Attaches XSTRAPS by utilizing opposing pressure, maintaining tension, and placing XSTRAPS between guides	1	
	<b>8</b>	

### Critical Criteria

- \_\_\_\_\_ Did not take, or verbalize body substance isolation procedures
- \_\_\_\_\_ If two rescuers, did not apply manual cervical stabilization
- \_\_\_\_\_ Excessive patient cervical manipulation was observed during application
- \_\_\_\_\_ Did not apply device tightly under patient's chin
- \_\_\_\_\_ Did not use opposing pressure to maintain neutral position when tightening XCOLLAR



## **SKILLS APPLICATION: IN-POSITION PLACEMENT**

Note: Evaluator will place the “patient” in-position and state to the student that patient must be secured in the position found.

Start Time: \_\_\_\_\_

Stop Time: \_\_\_\_\_

Date: \_\_\_\_\_

Candidate’s Name: \_\_\_\_\_

Evaluator’s Name: \_\_\_\_\_

	Points Possible	Points Awarded
Takes or verbalizes, body substance isolation (BSI)	1	
If two rescuers, one applies manual stabilization of the cervical spine	1	
Encircles the patient with the XCOLLAR and connects buckle side strap	1	
Ensures correct fit under patient’s chin with chin strap in place	1	
Tightens buckle side strap without over tighten it	1	
Tightens right side strap and checks for symmetry, readjusts both straps if needed	1	
Extends and locks Adjustable Chest Support	1	
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- \_\_\_\_\_ Did not apply device tightly under patient’s chin
- \_\_\_\_\_ Did not use opposing pressure to maintain neutral position when tightening XCOLLAR