Chapter 6: Types of Litters and Victim Packaging

Scope: This chapter serves as an introduction to rescue litters and victim packaging.
Terminal Learning Objective (TLO): At the end of this chapter, the student will be aware the role of the rescue litter and how to secure a victim in order to move over unstable terrain.
Enabling Learning Objectives (ELO):

1. Describe the types of rescue litters
2. Describe the specifics, advantages, and disadvantages of metal, metal/plastic, and plastic rescue litters
3. Demonstrate how to secure a victim to a rescue litter
4. Describe the considerations for packaging nonambulatory victims in unstable terrain

Rescue litters serve several purposes during rope rescue operations. They provide stabilization and protection for the victim to protect them against hazards such as protruding rocks while being evacuated. The litter also serves to provide a way for the rescuers to easily handle the victim over terrain. The rescue litter also provides a foundation to which ropes can be attached to assist in raising or lowering a victim on sloped terrain. Due to its size, a rescue litter is not easily used in confined space or limited access areas.

Rescue Litters

The rescue litter, or Stokes basket as it is commonly referred to, has been the standard for victim removal over rough terrain for many years. It can be carried by hand over mild terrain, or used in tandem with ropes or ladders to negotiate steep or rough terrain. The rescue litter by itself does not provide spinal immobilization. A victim requiring C-spine immobilization should first be placed on a backboard, which is then placed inside the litter.

Rescue litters should be inspected regularly for bends, cracks, broken welds, and damage or wear to any plastic. Cleaning can be performed with mild soap and water. Decontamination can be accomplished as per department policies.

Litters come in a variety of shapes and materials. This course will discuss the three most common types of litters.

1. Metal litters
2. Metal/plastic litters
3. Plastic litters

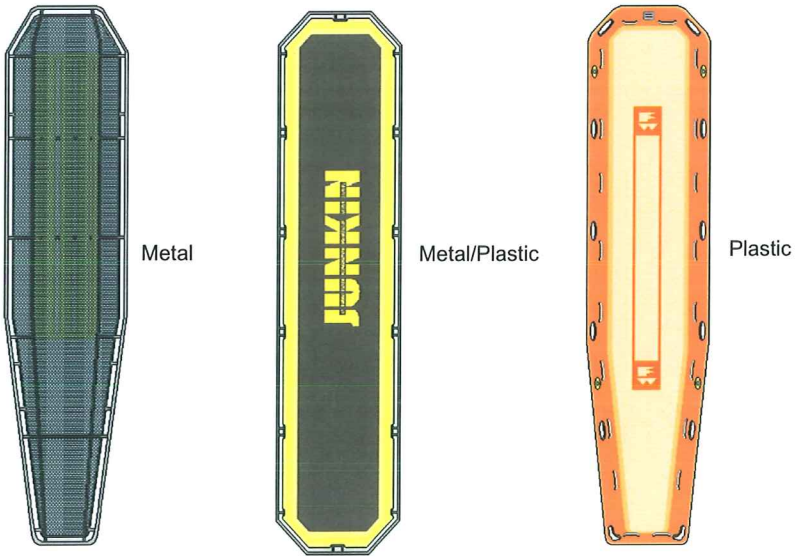

Figure 6-1: Common Litters

Metal Litters

Specifics

- ❒ The most commonly used rescue litter.
- ❒ Metal frame with wire, mesh, or nylon victim bearing surface.
- ❒ Various metals used for construction from heavy-duty steel to lightweight titanium.
- ❒ Multiple designs from rectangular to tapered leg models.

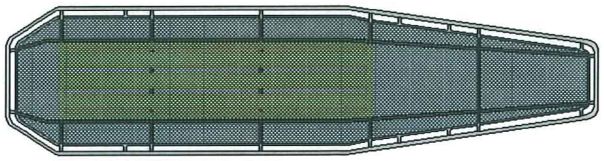

Figure 6-2: Metal Litter

Advantages

- ❒ Excellent strength and durability.
- ❒ Multiple lashing options and points of attachment.

Disadvantages

- ❒ Heavy and often bulky for confined spaces or restricted areas.
- ❒ May present a snagging or entanglement hazard.

Metal/Plastic Litters

Specifics

- ❒ Metal frame with a plastic shell attached to frame as victim bearing surface.
- ❒ Usually rectangular.

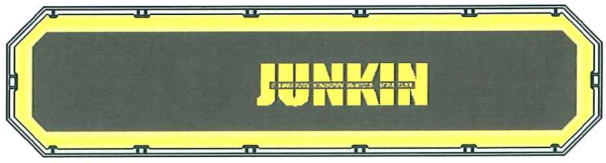

Figure 6-3: Metal/Plastic Litter

Advantages

- ❒ Metal frame is strong and durable enough for rope rescue operations.
- ❒ Slides easily over obstacles.

Disadvantages

- ❒ Limited lashing options and limited points of attachment.
- ❒ Plastic is vulnerable to wear and damage.
- ❒ Plastic will degrade if stored in sunlight for long periods of time.

Plastic Litters

Specifics

- ❒ Litter is a plastic shell with a metal rail that forms a ring around the rim of the litter.
- ❒ Usually rectangular is shape but may be tapered at the foot.

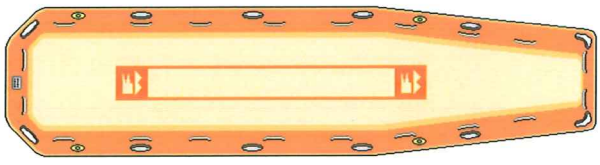

Figure 6-4: Plastic Litter

Advantages

- ❒ Lightweight.
- ❒ Useful for snow and water evacuations.

Disadvantages

- ❒ These litters are generally not the best choice for rope rescue operations due to their lack of structural stability.
- ❒ Limited lashing options and points of attachment.
- ❒ Plastic is vulnerable to wear and damage.
- ❒ Plastic will degrade if stored in sunlight for long periods of time.

How to Secure a Victim to a Rescue Litter

Victim packaging is an essential skill for all rescuers. If a victim is insufficiently secured to the litter, existing injuries can be worsened, and new injuries can be created. Victims are generally secured to the litter with interior and exterior lashings. Interior lashing consists of chest and pelvic lashings, which keep the victim from sliding out the head or foot of the litter. External lashing consists of webbing or other straps that are arranged across the victim from one side of the litter to the other; this keeps the victim from coming out the top of the litter. All victim lashings should be secured to structural members of the litter other than the top rail to avoid abrasion. Interior and exterior lashings are commonly constructed using twenty-foot sections of webbing though longer sections may be needed with large victims.

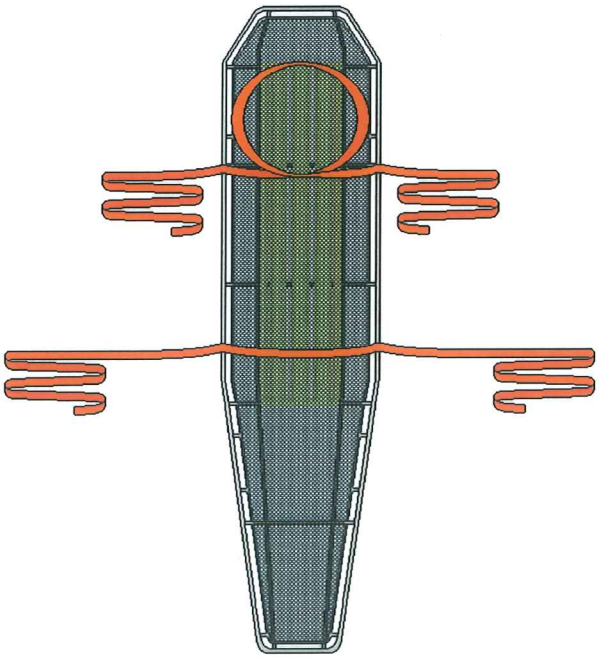

Figure 6-5: Steps 1 and 2 Prepping the Litter

Interior Lashing

To improve efficiency, webbing should be placed into the rescue litter before the victim, and oriented as shown.

1. Lay a 20-foot piece of webbing across the litter with the middle at the point where the victim's crotch will be.
2. Form an 18" loop in the middle of a second 20-foot piece of webbing and lay it in the litter so that the top of the loop is where the top of the victim's head will be.

Chest Lash

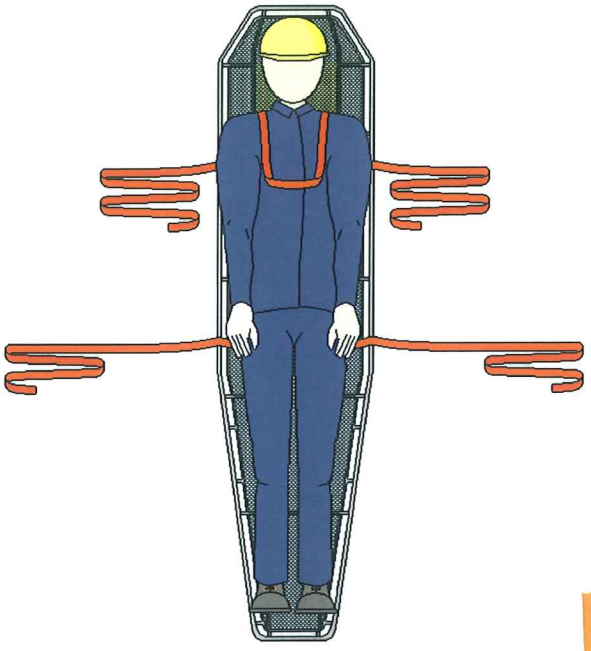

Figure 6-6: Step 1

1. Pass the loop over the victim's head to the victim's nipple line.

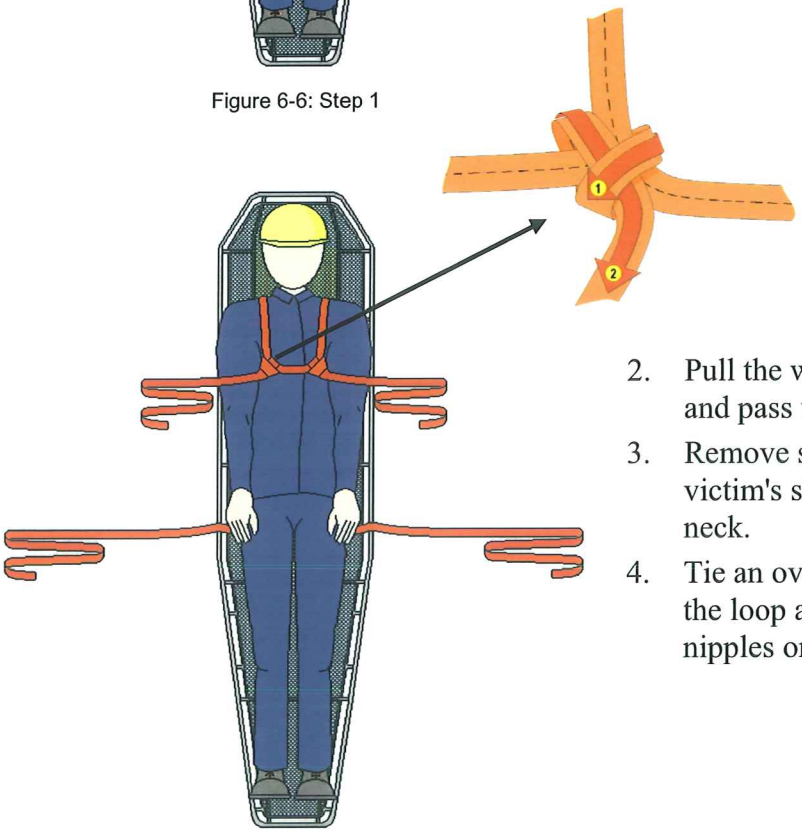

Figure 6-7: Steps 2-4

2. Pull the webbing ends from under each arm and pass through loop at chest.
3. Remove slack ensuring crossed webbing at victim's shoulder blades does not ride up on neck.
4. Tie an overhand knot in the webbing around the loop at the point it passes over the nipples on each side.

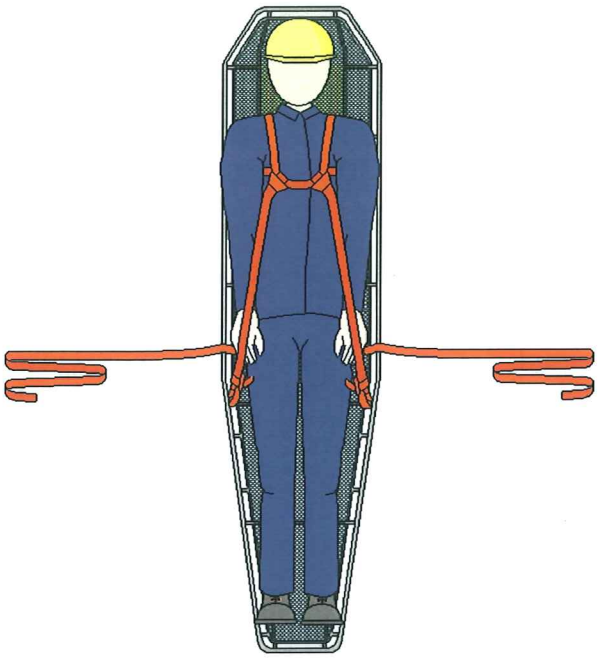

Figure 6-8: Steps 5 and 6

5. Tie a round turn and two half hitches at the ends of the webbing around a rib below the victim's waist where the rib meets the main frame.
6. Keep even tension between the two ends of the webbing when tying the knots.

Pelvic Lash

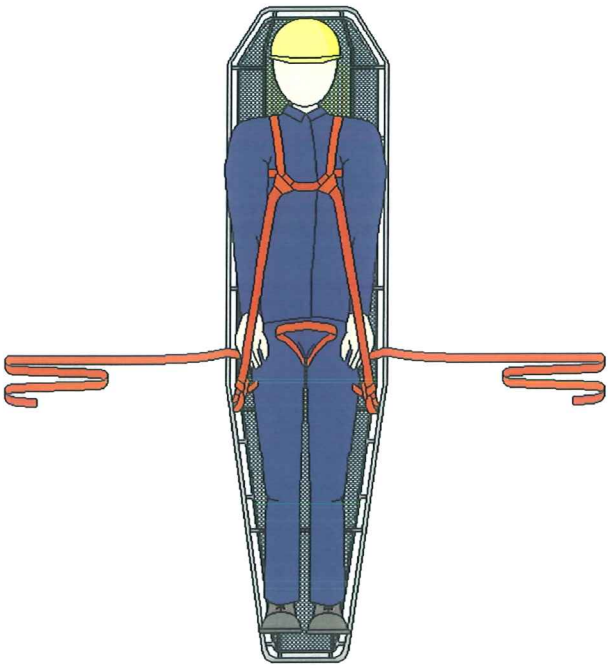

Figure 6-9: Step 1

1. Pull midpoint of webbing between legs up to victim's waist creating a 6" triangle.

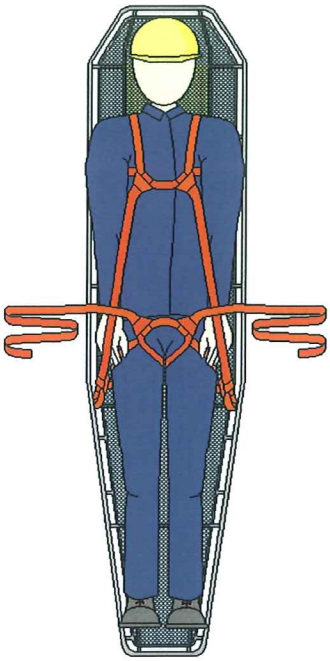

Figure 6-10: Steps 2 and 3

2. Pass ends of webbing around thighs and through triangle pulling up towards shoulders to remove slack.
3. Tie an overhand knot in the webbing on each side at the point it passes through the triangle.

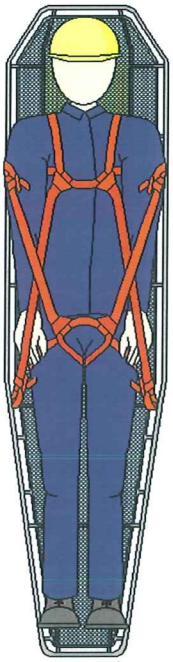

Figure 6-11: Steps 4 and 5

4. Tie a round turn and two half hitches at the ends of the webbing around a rib near the victim's shoulders where the rib meets the main frame.
5. Keep even tension between the two ends of webbing when tying the knots.

Exterior Lashing

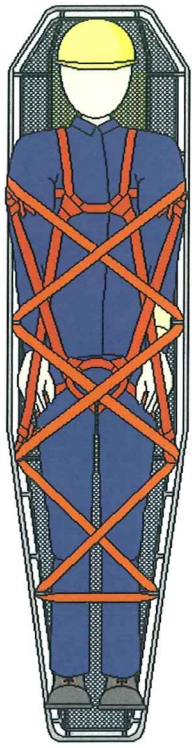

Figure 6-12: Steps 1-7

1. Place a 20-foot piece of webbing across the victim's legs with the mid point at or below the knees.

   Note: Depending on the victim's size, the 20-foot piece of webbing may be too short. Either tie another piece of 5- or 12-foot webbing to the 20-foot length or cut a 25- or 30-foot piece of webbing specifically for exterior lashing.
2. Pass the ends of the webbing around the rib at or below the victim's knees on both sides where the rib meets the main frame.

   DO NOT WRAP THE MAIN FRAME!
3. Cross the webbing and pass the ends of the webbing around the next rib moving towards the head.
4. Repeat this operation until webbing passes around the ribs near the victim's shoulders.
5. Tie a round turn and two half hitches at one end of the webbing around the rib to secure the end.
6. Remove slack by pulling webbing from secured end toward free end.
7. Tie a round turn and two half hitches with the free end around the rib to secure the webbing.

Alternative Victim Packaging (Optional)

There are several alternative methods available for lashing a victim to the litter. Many agencies are now using commercially available victim packaging equipment in place of the traditional webbing lashings. These methods of victim packaging are designed to make the job of packaging a victim more efficient. Each method has advantages and limitations and requires specific training for safe and efficient use. This text will present one method of alternative packaging. This method is **not** a FSTEP standard for victim packaging; it is an example of a regional standard developed through a local fire and EMS effort. The instructor may choose to incorporate local standards into his or her course content.

Equipment Needed

- ❒ One rescue litter.
- ❒ One NFPA Class II harness or victim harness.
- ❒ One backboard.
- ❒ Two sets of adjustable Velcro "spider" straps.

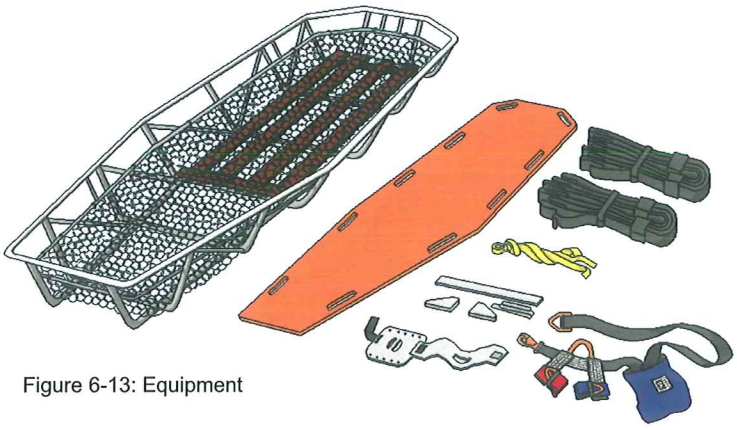

Figure 6-13: Equipment

- ❒ One C-spine and head immobilizer.
- ❒ One 12-foot section of webbing.

Advantages

- ❒ Quick and reliable means of securing a victim to litter.

Disadvantages

- ❒ Harnesses can be difficult to place around some victims.
- ❒ The number of victims may exceed the number of victim harnesses. In this case, the webbing hasty harness described in Chapter 5 should be considered.
- ❒ Adjustable Velcro "spider" straps are not well suited to use with children or very large adults due to minimal Velcro overlap. In this case consider:
  - Size specific adjustable Velcro "spider" straps, i.e., small or x-large.
  - Webbing exterior lashing.

Uses

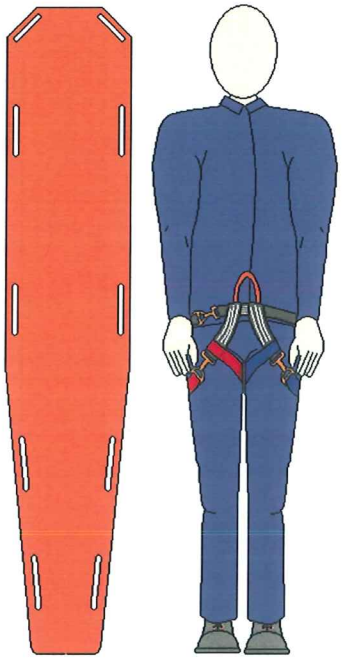

Figure 6-14: Step 1

1. Place a victim harness on the victim before placing in the backboard or litter.

2. If the victim requires C-spine immobilization, place on a backboard and secure per local protocols.

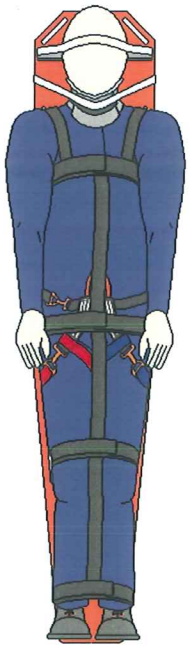

Figure 6-15: Step 2

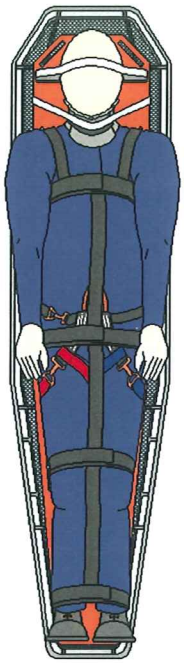

Figure 6-16: Step 3

3. Place the victim into the rescue litter.

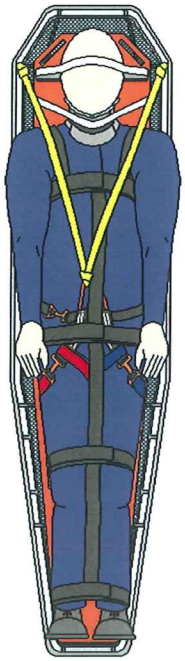

Figure 6-17: Steps 4 and 5

4. Secure midpoint of 12-foot webbing to the victim harness attachment point with a lark's foot.
5. Secure the ends of the 12-foot webbing to the litter at or above the victim's shoulders with a round turn and two half hitches.

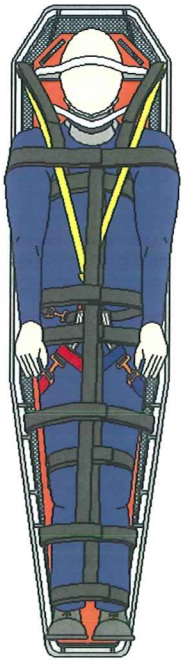

Figure 6-18: Steps 6-8

6. Place the adjustable straps along the body.
7. Secure the cross straps to the lower rail of the litter across chest, pelvis, femurs, and shins.
8. Place the shoulder straps over the shoulders and secure to the lower rail of litter.

Considerations for Packaging Nonambulatory Victims in Unstable Terrain

- ❒ If the victim is in danger of falling, secure the victim to the main and belay/safety line with the victim harness and prusiks.
- ❒ Position the rescue litter below the victim in a horizontal, level position as if it is flat on the ground.
  - Secure the rescue litter in place against the rescuer's knees.
- ❒ Ease the victim onto the rescue litter and package as shown previously in this chapter.
- ❒ Once packaged, the rescue litter can be placed in a normal position for the raise.