



Back-splinting with the Cascade Rescue Advance Series Model 200 Litters

This article provided courtesy of Douglas Burchard of King County SAR

Cascade Rescue Company has released a modification for their Advance Series Model 200 litters that allows the litter to be used for back-splinting in a similar fashion to the more ubiquitous backboard. This modification is called FastPax rails and can be only installed at the factory. This is a tremendous boon to search and rescue operations that frequently must hand carry their gear (and the associated weight) to remote locations, often without knowing ahead of time exactly what they will require.

This rather simple modification consists of a formed, hardened and hard anodized aluminum rod running down each side of the litter, attached at intervals like a daisy chain. The daisy chain provides familiar points to tie down a patient with a suspected spinal injury firmly to the bed of litter.

Similar as this is to the familiar backboard, there are still a few steps that shouldn't be missed when using a litter as a back-splint. And, any use of any back-splint for a prolonged pre-hospital application provides unique challenges that must be addressed.

Step-by-step

1. Make certain you have the following materials available:
 - a. Cascade Model 200 with FastPax tie downs
 - b. 2 tarps at least 6 x 8 feet
 - c. Two or more sleeping bags
 - d. Adhesive tape
 - e. 8 cravats or other back-splint tie downs
 - f. Copious padding material such as several fleece jackets
 - g. C-collar
 - h. 12 feet of 1-inch tubular webbing to create a sit-harness
2. If the litter is a breakdown model, assemble the litter as usual.
3. Place a tarp or other waterproof covering in the bottom of the litter. Make sure when the tarp is pressed along the bottom of the litter the sides reach up to just above the metal railing of the litter. Fold the tarp if necessary to

accomplish this. Let any extra length of the tarp run over the foot of the litter.

4. On top of this bottom-tarp place a closed cell, or inflatable, sleeping pad. The sleeping pad should reach nearly to the head-end of the litter, leaving the foot end to run short.
5. To finish the preparation of the litter place a closed sleeping bag on top of the bottom-tarp/sleeping pad combination.

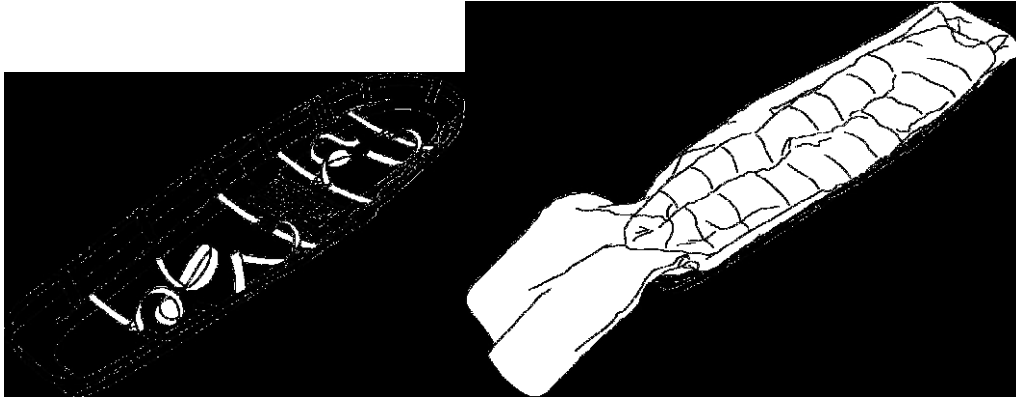


Figure 1: Fully assembled and empty Model 200 litter.

Figure 2: Litter prepared to receive patient.

6. Prepare the patient for the splint by first fully assessing any possible injuries and stabilizing where possible. Apply a C-collar to the patient's cervical spine and a sit harness created from webbing to the patient's hips. The sit harness is for later tying the patient into any rope system for raising or lowering. Tying the patient into any rope system is the nationally recognized standard of care, and it's easier on the patient to apply the sit harness now than later.
7. Be sure to remove the patient's boots and socks to allow checking the dorsalis pedis pulse. This will also prevent swelling of the feet from cutting off circulation, increase the stability of your splint, and generally make the patient more comfortable.
8. Lift the patient off the ground using a bridge-lift, or other appropriate maneuver, with a minimum of five personnel. Have an additional rescuer slide the prepared litter under the raised patient from the patient's foot-end.
9. Pad copiously beneath the patient's knees, until the pelvis pivots flat. This will significantly help with patient comfort and possibly eliminate any need to pad beneath the small of the back. Also pad under the backs of the patient's lower legs so the heels are suspended above the litter bottom.
10. Tie the patient to the litter using cravats as you would to any other back-splint. Typically this involves two cravats crisscrossing the shoulders, one

across the rib cage, two crisscrossing the pelvis, one across the thighs, and one across the lower legs. Specially made back-splint tie downs such as spider-straps can be used as well, but will mean additional equipment to carry in.

11. Ensure the cravats are wide where they cross the patient's body to provide greater comfort and avoid complications. If the cravats won't stay wide, pad between them and the patient.

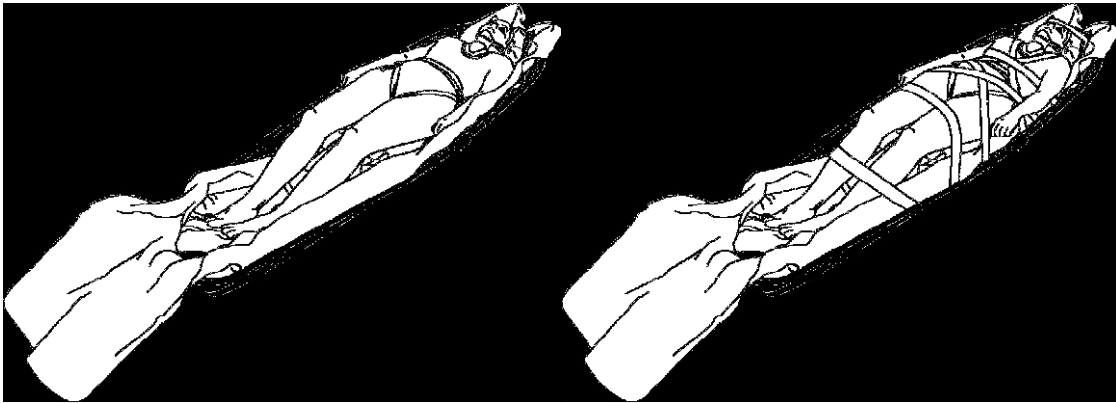


Figure 3: patient with C-collar and sit-harness placed in litter.

Figure 4: patient strapped into splint.

12. Where the sleeping pad you placed earlier extends past the patient's head, draw both sides up around the patient's head and tape together across the forehead. This prevents the back of the patient's head from rotating.
13. Finish tying the patient down by taping from edge to edge of the fiberglass litter across the patient's brows. This prevents the front of the patient's head from rotating. Do not attach tape to the metal rails where they could get bumped and jostled during transport. If a vertical attachment is in the way of the tape, apply two strips of tape in a crisscross pattern.



Figure 5: sleeping pad drawn up sides of patient's head and taped across forehead.



Figure 6: Patient's forehead taped to sides of litter.

14. Cover the patient with one or more sleeping bags as required to keep the patient warm. Make sure the edges of the top-sleeping bag, or bags, drape over the patient and touch the edges of the sleeping bag beneath the patient along their entire length to prevent drafts. If one bag is not wide enough to accomplish this, use two overlapping sleeping bags to span the width.
15. Draw any remaining length of the bottom-tarp extending beyond the patient's feet back up and over the patient and top-bag. Fold a second tarp to an appropriate length and width to completely cover the top sleeping bag and overlap the sides of the bottom-tarp along the entire length.
16. Lash down this top-tarp with the straps provided with the litter. If the top strap would cross the patient too close to the face or neck, cross the two straps closest to the head of the patient. Do not tighten these straps down so much that they compress the top sleeping bags and eliminate their insulation.

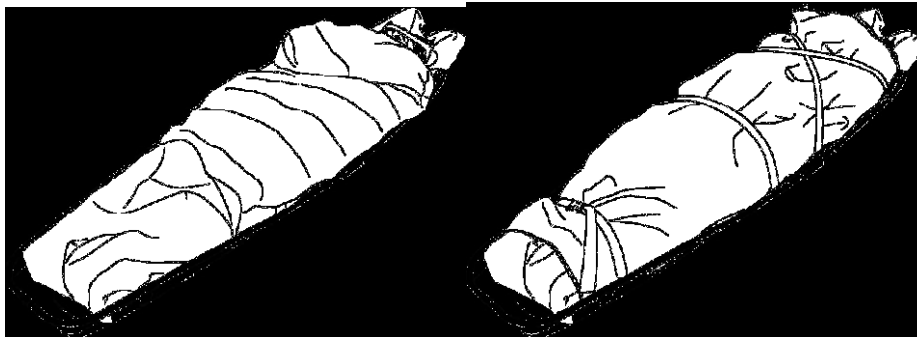


Figure 7: sleeping bags placed on top of patient and bottom-tarp drawn up over feet.
Figure 8: top-tarp applied to litter and strapped in place.

17. Leave enough space around the patient's head to allow the patient to breath and to provide access for communication between the patient and rescuers. Run the top-tarp long enough to completely cover the patient's head in case of inclement weather. The bulk of the sleeping bags should keep the top-tarp away from the patient's face.

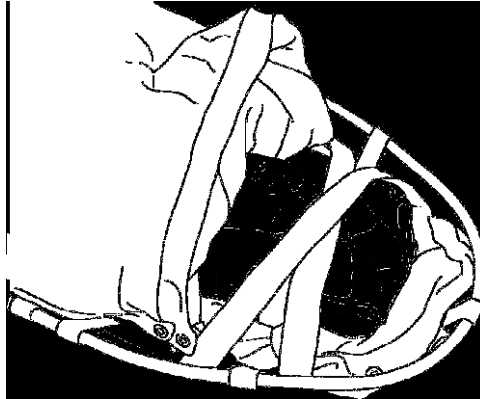


Figure 9: patient's head left exposed in finished package.

18. Continue to re-check the patient's radial and dorsalis pedis pulses periodically during transport and record each time you check. If the dorsalis pedis pulse is lost, or the patient experiences numbness or tingling, selectively untie the cravats and re-apply.
19. Ask the patient periodically if they're feeling "hot-spots", "tingling" or "pressure" anywhere along their body. Don't allow complaints to go unaddressed for even the briefest amount of time. Immediately expose the area of complaint, and adjust padding around the site.
20. Be sure to manage the patient's general well being. Protect the patient from the environment with clothing or sleeping bags during the entire splinting process. If the patient can swallow without choking, give high-energy food and water.

Tips and tricks

Practice, practice, practice! The professional rescuer needs to be intimately familiar with any equipment they use. With the FastPax modification, the Cascade Model 200 becomes a much more useful device, eliminating the need for a separate back-splint and ensuring you'll always have a back-splint with you. But a prolonged pre-hospital environment can amplify even mild omissions in patient-care to critical issues.

Facilitate finding the dorsalis pedis pulse for periodic checks by marking its location with a pen. Electronic blood pressure monitors that fit around the patient's wrist will speed your periodic monitoring of vitals. If you don't have one of these devices leave a stethoscope and blood pressure cuff in place loose on the patient. Each time you check the vitals be sure to note the patient's relative temperature by feeling their forehead and upper arm.

Padding between the litter and the patient is critical to prevent complications like blisters, pressure necrosis, and ulcerations. There really is no such thing as too much padding. Keep the padding you use smooth and soft to prevent pressure points along creases. A foam padding along the bottom of the litter will help to

ensure patient comfort. This does not replace the sleep pad mentioned in step 4 of this article, but does ensure a minimum amount of padding for the patient.

During a long evacuation, if the patient can swallow and it isn't otherwise contraindicated, frequently give the patient fluids and high-energy food in small amounts. While conventional environments allow food and water to be withheld from a patient, in a prolonged situation food and water will help stave off hypothermia and give emotional comfort to the patient. Remember that the patient has the same requirements as you, but cannot provide for them self.

Douglas Burchard joined Snoqualmie Pass Ski Patrol and the National Ski Patrol in 1989 along with King County Search and Rescue Association in 1992. In addition Doug has earned an EMT-B and a Wilderness EMT; been Training Coordinator and Vice President for King County Search and Rescue; and also Training Coordinator for Ski Patrol Rescue Team (SPART). Doug has instructed for National Ski Patrol, King County Search and Rescue Association, American Red Cross, American Heart Association, and the National Safety Council.