

THE PATHFINDER SCHOOL &
BLIND HORSE KNIVES PRESENT

Issue Number 6

Jan./Feb. 2012

\$6.99 USD

SELF RELIANCE



illustrated

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Teaching Our Youth & Passing
on the Tribal Knowledge



Essential Backcountry Gear: The SAM Splint

By Jim Miller



Photo 1



Photo 3

One of the biggest threats to our safety and well being while in the wilderness is a mechanical injury. If you or a member of your group experiences a fracture or dislocation in the field, your treatment options are very limited. In the end, you ultimately have to package the patient and injury and get them to definitive care as soon as possible. Modern ambulances carry a variety of splints that are designed to immobilize the injured limb to reduce the potential for further injury. Obviously you can't carry large bags of splinting supplies while out on foot in the wilderness. So what are you supposed to carry?

Enter the SAM Splint. For 25 years SAM Splints have found their home with ambulances, ski patrols, military medics, veterinarians, wilderness



Photo 2

rescue teams, and even on the space shuttles. Their versatility, low cost, light weight (4 oz.) and portability have made them a favorite wherever the functionality of a splint was needed but storage space is limited.

Sam splints are highly respected pieces of equipment in the "pre-hospital care" setting not only because of their small size and light weight, but due to their incredible versatility and low cost. A SAM splint can splint anything from an adult femur (long thigh bone) to a child's finger after cutting and bending.

Wilderness First Aid principles teach us to improvise with what we have on hand. While you could certainly splint an injured extremity with sticks or sections of frame from an external frame backpack, your patient will certainly feel less discomfort and you will probably prevent additional injury from the transport by using purpose built equipment. SAM splints are a small, lightweight, easy to use (and reuse) piece of equipment that everybody should have in their backcountry First Aid kit.

How Does it Work?

SAM (Structural Aluminum Malleable) splints are made of bendable aluminum alloy that is sandwiched between two pieces of closed cell foam.

Depending on the day, Jim Miller can be found working as a Firefighter/EMT, or securing computer networks. While not working either job, he can be found spending time with family or doing outdoor activities such as mountain biking, fishing, kayaking, or just about anything else outdoors



Photo 4

When the splint is flat it is bendable, and can even be cut with household scissors. By bending it as directed, “structural curves” are added to the splint, adding rigidity and stability that make it strong enough to splint extremities so the injured parties can be transported safely to definitive care.

What I Carry

SAM Splints come in 4 sizes; 36”, 18”, 9” and 3.75”. I carry the 36” model because it can easily be cut into any size you need or doubled over for added strength. This is the biggest size, so it would be the most appropriate for a leg. I use the combination blue/orange splint. Orange objects are always good for signaling. SAM splints are also available in grey, blue/grey and olive drab for military applications. I always keep trauma shears in my medical kit, but normal scissors will cut the splint as well. Of course I always have other materials to help in applying the splint, including tape and assorted bandaging material. (Think multiple use items.)

Using the SAM Splint

When you get your SAM splint, it will be wrapped in cellophane and either folded flat or rolled, depending on the size. They can easily be modified for your storage needs. It is a good idea to unroll or unfold it and familiarize yourself with its characteristics before you actually need to use it.

After removing the packaging of the SAM splint, you will need to identify the injury that needs to be splinted. This could be a broken bone or a dislocation. You will need to bend the SAM splint into one of three curves to give it the strength and durability to properly stabilize the injury. Keep in mind that the intent of a splint is to stabilize an injured limb so that the patient can be transported to an appropriate medical facility.

The C-curve is the most basic curve. You can create a C-curve by first flattening the SAM splint. Bend the splint by applying pressure to the imaginary center line running the length of the splint while simultaneously bending the sides up. You can deepen the bend for even greater strength. This will look similar to a gutter when you finish bending it. (Photo #2) The reverse C-curve adds additional strength. Start by making a regular C-curve. Now bend the edges back away from the center in the opposite direction. (Photo #3) The third curve that can be used to add strength to the SAM splint is the T-bend. This can be made by folding the edges together lengthwise. Now bend the outer edges outward to form two 90 degree angles. This will form the shape of a T. (Photo #4)

Applying the Splint

First you will want to identify the extent of



Photo 5

Left: Photo 6



Position the SAM splint so that it supports and stabilizes the injury, preventing further harm. Secure the SAM splint to the limb by taping or tying it to the injured limb. You can secure it above and below the injury, but make sure you do not tie or tape it at the actual injury site. Now, re-check the pulse, motor, sensory at the same place to make sure the splinting did not cut off circulation or no other damage occurred during splinting.

Getting a SAM Splint

SAM splints are sold online and in a number of medical supply stores. At the time of this writing, Amazon.com had a selection for sale, with the 36" model starting around \$11. While splints can certainly be improvised in the field, this is an inexpensive piece of kit that can be used and reused for a variety of splinting tasks. Given the small storage requirements, light weight, low cost and versatility, I highly recommend the SAM splint for your back country medical kit.

Disclaimer: This article is not intended to be a substitute for proper medical training or advice. You are ultimately responsible for the actions you take during a medical emergency. Always make sure that you have proper training to use any piece of medical equipment **before** the need arises. Always follow the manufacturer's instructions while using medical equipment. Techniques shown in this article are for informational purposes only.

the injury. Is it just an ankle or forearm, or are there multiple injuries? Determine the best method to use the SAM splint. In some cases it is better to double the splint over for added support, as shown in Photo #5 that depicts a forearm injury. In other instances it is more appropriate to bend the splint in the shape of a "U" and provide support on either side. See photo #6, which depicts an ankle injury. If the injured limb is in a position that is appropriate for splinting, shape the splint so that it conforms to the shape of the injured limb. Check if the patient has a pulse, motor function and can feel sensation at a location that is farther away from the body's core than the injury. In emergency medicine these are called PMS (Pulse, Motor, Sensory).

