

BASE jumping injuries and treatment in the field

By DexterBASE

You just landed after throwing a double gainer from a cliff in Moab. Adrenaline surges through your system as you think of the amazing visuals you just saw. As you gather up your canopy, you pause to watch the next jumper exit. After a short delay, he tosses his pilot chute and the canopy deploys offheading. He takes evasive measures but the strikes the wall repeatedly. After finally getting the canopy turned away from the cliff, he lands hard on the talus and tumbles to a stop thirty feet below and doesn't move... Now the real adrenaline kicks in. What do you do?

Introduction The scenario above is a severe one, but all too possible. In the hazardous environment we know as BASE jumping, we often place ourselves in situations which may result in our injury or death. Due to the inherent risk involved with this activity, every time we jump there is a possibility that something will go wrong. Fortunately, the most common BASE injuries are relatively minor and having a basic knowledge of first aid can help dramatically. With immediate care you can reduce the lasting effects of many injuries, and the time it takes to recover. Another goal is to improve the comfort level of the injured. The scene of an accident is not the place to be thinking about learning lifesaving skills. Preparing yourself ahead of time will make you a more confident jumper and knowing your partners have the same skills will go a long way if you yourself happen to be the one needing help. For the purposes of this paper, I have tried to explain things in layman's terms wherever possible and assume that you have taken a basic CPR course. (Call the American Red Cross or go to www.redcross.org.)

Assessment This is where you size up the situation and the extent of the jumper's injuries. This is a process you will use for serious injuries. Your basic assessment should take about one minute. Not slow enough to waste valuable time, but not so fast that you miss important signs. Your minute will be divided into two phases: the *Primary survey* or *ABC's* (15 seconds), and the *Secondary survey* (45 seconds).

Primary: Establishing the severity of the situation.

1. **M**ake the scene as safe as possible. Move anything that may be a risk to you or the injured and get hysterical people out of the area. Send someone for help.
2. **A**irway. Make the jumper has an airway. If they can talk to you, they have an airway. If not, check yourself. Use the head tilt/chin lift or a jaw thrust. (These techniques can be learned in a basic CPR course.)
3. **B**reathing. Are they breathing? Put your ear to their mouth/nose area and look for the chest to rise and fall. If no breathing, revert to your CPR training.
4. **C**irculation. Do they have a pulse? If not, start CPR. Is there profuse bleeding?
5. **D**eformity. Are there obvious injuries?

6. **Expose.** Weather conditions permitting, remove the clothes of the jumper (cut preferably) and cover with blankets as needed. Hypothermia is a possibility now and you need to be aware that the jumper may go into shock.

Secondary:

1. Eyes, ears, nose, and mouth:
 - a. Eyes; in sunlight, cover the eyes then uncover them and see if the pupils react. At night use a light to check.
 - b. Ears; is there any fluid coming out? Don't try to stop drainage.
 - c. Nose; any bleeding?
 - d. Mouth; look for blood or broken teeth. Teeth can be a choking hazard so remove loose, broken pieces.
2. Neck: Can you see any obvious deformities?
3. Chest: Can you see any section of the chest that moves opposite the rest when the patient breathes? (Broken ribs) Is there any tenderness?
4. Abdomen: Is there any tenderness or does the abdomen seem more rigid than normal? (Internal bleeding) Are they trying to keep you from touching them?
5. Pelvis: Any tenderness? Can you feel bones rubbing or grinding? Someone with a broken pelvis will sometimes feel like they're, "falling apart."
6. Arms: Do you see any obvious fractures? Can you feel any bones grinding? Can you feel a pulse in the wrist? Check circulation by pressing on the fingernails and seeing how fast they get red underneath. Try this on yourself for a comparison. Can they feel you touching their hands? Can they move their arms? Have them squeeze both of your hands at the same time and feel if one side is weak.
7. Legs: Do you see any obvious fractures? Can you feel bones grinding? Can you feel a pulse behind the ankle? (Check behind the big ball on the inside of the ankle.) Check the nail beds. Can they feel your touch? Can they wiggle their toes?

By now, you should have an overall impression of how severe the jumpers' injuries might be. Now you can plan the best course of action for the rescue efforts. Redo this assessment every 3-5 minutes until EMS personnel take over. Be sure to report these findings to EMS personnel as it will provide useful information to them.

For a quick set of field vital signs:

1. Check the pulse and count beats per minute.
2. Approximate blood pressure can be obtained without a stethoscope or BP cuff. A cool trick: If you can feel a wrist pulse, the systolic pressure is about 80. If you can feel a pulse on the inside of the arm where the bicep and tricep meet, it's about 70. If you can only feel it in the neck, it's about 60.
3. Check breaths per minute.

This may not mean much to you but if you can provide EMS workers with a sheet of vital signs detailing every five minutes in the past half hour, it can increase your friends' odds of surviving. This is because it shows the "trend" of vital signs and can give valuable clues about the condition of the jumper.

Shock Shock can have several different causes but the likely causes in our situations would be trauma to the nervous system, or loss of blood. Shock occurs when tissues and vital organs are not getting enough oxygen from the bloodstream.

Symptoms of shock include:

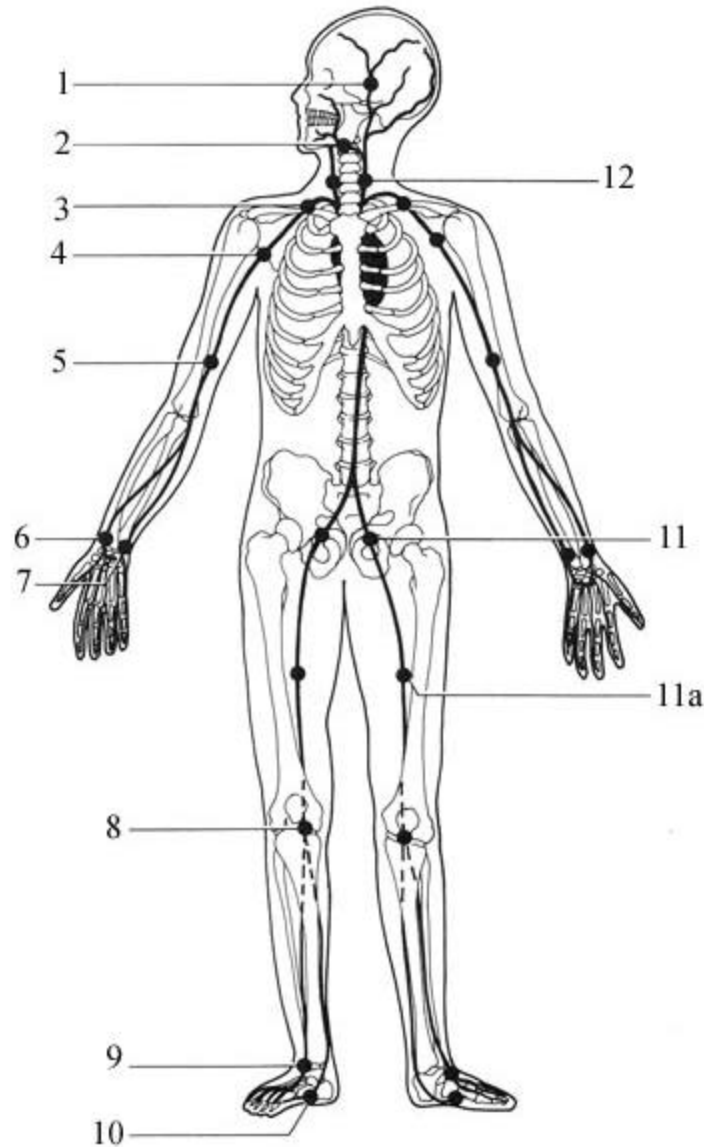
1. Pale, cool, clammy skin
2. Restlessness
3. Nausea/vomiting
4. Rapid breathing
5. Drop in blood pressure

The first step in treating shock is to stop blood loss. Then, cover the jumper with a blanket. As long as injuries don't prevent you from doing so, elevate the feet about 8-10 inches over the heart. They may get thirsty but try not to give anything to eat or drink. If there may be a long delay until help arrives, you can give small amounts of water at room temperature. Even if a jumper doesn't display symptoms of shock, treat for shock anyway. They might not be in shock *yet*.

Bleeding There are three types of bleeding: capillary, venous, and arterial. Capillary bleeding is the oozing blood you see when you skin your knee. It is minor and not life threatening. Venous bleeding is blood from a vein. It is dark red and flows out of the wound. Arterial bleeding is pretty obvious since there will usually be an arc of bright red blood spurting out of the body. Arteries carry lots of blood and arterial blood loss can be immediately life threatening.

Stop the bleeding:

1. Apply pressure directly over the wound. If you have a clean dressing, use it. If you don't have something sterile, use what you have. A shirt or towel will work. If the wound gets dirty, we can treat it with antibiotics later.
2. If direct pressure fails to stop the bleeding, combine direct pressure with elevating the wound over the heart.
3. If the bleeding still hasn't stopped, apply direct pressure to a pressure point. There are eleven pressure points on each side of the body.



4. If all else has failed, use a tourniquet. The decision to use a tourniquet is a serious one. This will completely stop the blood supply to the extremity involved and may result in that limb being amputated. Use it in a life or death situation. To apply a tourniquet:
 1. Wrap a band around the limb. Preferably, use something flat and at least one finger wide. A strap from a stashbag will work.
 2. Tie it in a knot around the limb.
 3. Lay a stick or similar object directly on the knot and tie another knot over it.
 4. Twist the stick to tighten the band. Twist it until the bleeding stops.
 5. Tie the stick in position.

Record what time you applied the tourniquet and once it's on, DO NOT remove it.

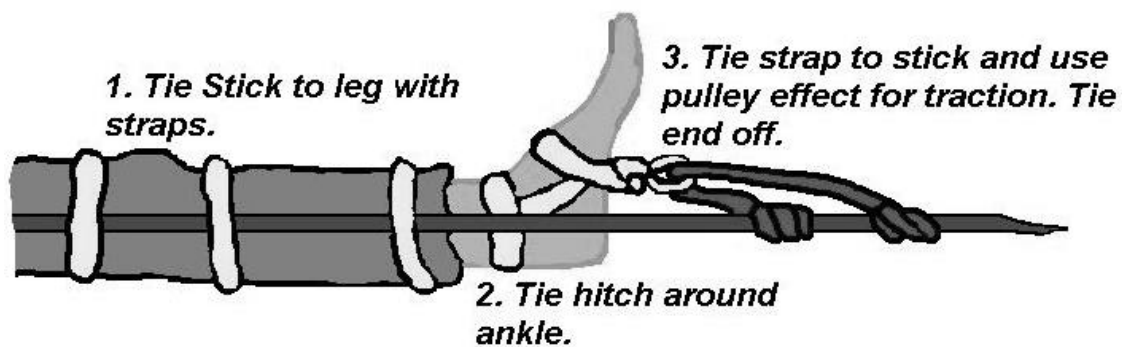
Femur Fractures The femur is the long bone between your hip and knee. Alongside your femur, lies the femoral artery. The femoral is one of the largest arteries in your body and cutting it can result in bleeding to death very rapidly. For this reason, proper attention to femur fractures is extremely important. Fortunately, the femur is a serious chunk of bone so it takes a lot of force to fracture it.

If you suspect that the jumper has a femur fracture, you must not let them attempt to walk on it!

After the thigh is injured, the muscles will spasm. If the femur isn't there to support the muscle, the sharp bone ends can cut muscle tissue, nerves, and the femoral artery. The way to prevent this is to apply traction in the long axis of the bone. The easiest method of applying traction is to use a traction splint. (The Kendrick traction splint™ is a very BASE friendly item to have. It costs about \$100 and folds into a pouch that will fit inside a hip pouch or cargo pocket. If you were sitting there with a femur fracture I could offer you one for a couple thousand dollars and you'd accept.)

To apply traction, pull straight on the ankle. Imagine trying to stretch the leg and make it longer. You will need to keep constant traction until an actual traction splint is available. It is very important that you never let up the tension or else serious damage may result. If the shoe comes off, the resulting rebound will be excruciating and bad things will happen. For this reason, remove the shoe on the broken leg. The jumper won't be walking anyway.

Improved traction splint



Splinting Splinting is not really a science. When a bone breaks, the ends are usually very sharp. When these sharp edges move around, you can damage muscle tissue, nerves, and blood vessels. In order to prevent this, you splint the affected bone to immobilize it. Sometimes, you use whatever is available.

There are two classifications of fractures, closed fractures and open fractures. Closed fractures include any fracture where the bone does not break the skin. In such instances, proper treatment includes immobilizing the fracture and seeking medical attention. Open fractures occur when a bone breaks through the skin.

Signs of a fracture include

1. A bone end sticking out of the body,

2. A grinding feeling at the site of the suspected fracture,
3. Deformity of the limb,
4. Loss of ability to move the limb,
5. Loss of pulse or sensation,
6. Muscle spasms.

Your first step in treating a possible fracture is to stop and take a deep breath. Few fractures are life threatening unless they are mishandled. If there's no apparent life threatening injury, the best approach is a slow methodical one.

Cut away clothing from the area and control any bleeding. If you find an open fracture, treat it like any other wound.

Generally, you don't want to attempt to straighten out a broken limb. Don't try to realign the bones yourself. There are exceptions to this. If the limb has no pulse or is losing color, you may need to reduce the angle of the fracture to restore circulation. If you need to transport the jumper over rough terrain, a limb sticking out to the side will make things difficult. In these situations, not splinting would be more dangerous. **IF YOU DECIDE TO ADJUST A FRACTURE**, keep in mind that the sharp end can do major damage to the surrounding tissues so limit movement as much as possible. Also, have someone hold the jumpers arms so you don't catch a right hook.

The goal in splinting is to immobilize the bone that is broken. You should try to immobilize the joint above and below the fracture.

Find something to use as a splint. Most sites where we jump are in wooded areas so there is usually a variety of sticks and branches to choose from. If possible, pad the splinting materials with a towel or shirt to take up the space between the limb and the splint. This will also improve the comfort of the jumper. Use your imagination and you can usually come up with a splint for most fractures.

Forearms can be fractured when you try to catch yourself during a less-than-graceful landing. Fractured forearms should be splinted with a natural curl of the fingers. Place a roll of gauze, or something similar in the palm of the hand. This will go a long way to improve comfort.

If you suspect fractured ribs, you can pad the chest and gently wrap it. Placing the arm on the affected side into a sling helps. Try so calm the jumper and have them sit down until help arrives. Limit movement since a fractured rib can puncture a lung.

If you suspect a skull fracture, **DO NOT** place pressure on the head. Monitor level of consciousness and do not give morphine!

Joint injuries Damaging joints is a constant threat to BASE jumpers. Ankles are the most frequently injured joints skydiving, BASE jumping, and most sports. There's a saying that goes, "An ounce of prevention is worth a pound of cure." This applies to us because it is pretty easy to reduce the number of ankle injuries. Wearing an ankle brace is an easy and effective measure to prevent hurting your ankles in a sketchy landing. They're available at any sporting goods store. A simple low-grade sprain can keep you grounded for a weekend. A serious sprain can keep you from jumping for a year or longer.

If you break a bone, it will usually heal stronger than it was before you fractured it. Ligaments, tendons, and other soft tissues may never completely recover from injuries. Ask anyone who's been jumping for a few years.

If a jumper injures a joint in the field to the point that it will not bear bodyweight, you should treat it as a fracture until an x-ray can prove otherwise. Splint it and proceed to the nearest hospital for evaluation.

All Sprains can be treated with the acronym, **R.I.C.E.**

Rest: stay off the affected joint and give it time to heal.

Ice: apply ice, cold packs or frozen vegetables to the joint. Peas work well because they will conform to the shape of the joint. Just don't eat them after several freeze/thaw cycles.

Compress: wrap the joint firmly but not too tight. An ACE wrap can be ideal. If your fingers or toes turn purple, it's too tight. If you squeeze your nail-beds, the color should return immediately. If not, re-wrap more loosely.

Elevate: Kick back and have a cold one. Try to keep the injured joint at about heart level.

This regimen can be supplemented by taking Motrin (ibuprofen) or Aleve (naprosyn). Follow dosing directions on the package. Both are anti-inflammatories and will help with the pain. If this treatment isn't working, it might be a good time to see a doctor.

Summary This paper is by no means, a complete set of first aid information for the BASE jumper. In addition to reading this paper, I highly recommend enrolling in a CPR class, a basic first aid course, and an EMT Basic course. Most junior colleges offer an EMT course and CPR is usually included. These classes will show you how to approach an injury and decide on the most appropriate course of action.

First aid is a skill-set we hope to never need. The harsh reality of our sport is that there will be more injuries, and there will be more fatalities. Hopefully someday BASE jumpers will stop being injured and killed. Until that day comes, we all need to know what to do when accidents happen. ---Dexterbase