

PARAGLIDING FIRST AID COURSE

COURSE OBJECTIVES: Develop skills necessary to treat common injuries associated with Paragliding and other extreme sports. Learn essential skills necessary for emergency treatment:

1. Evaluate Patient for Injuries (BLS AND HEAD TO TOE ASSESSMENT)
2. Call EMS Services
 - A. Cell Phone
 - B. High Frequency CB Band
 - C. Use of Ham Radio UHF Repeaters
 - D. Activate In Reach
3. Stabilize Patient for EMS or club evacuation.
4. Self-evaluation and treatment if necessary.
5. Treatment of Common Paragliding Injuries.

BASIC LIFE SUPPORT

D Dangers (Stabilize pilot, unclip glider to avoid further injury, power lines, fences, tide)

R Responsive (Is the patient conscious and responsive to verbal and physical stimuli)

S Send for help (Land Ambulance or Air Ambulance depending on injury assessment))

- Cell Phone 111
- Activate InReach/PLB
- Call other Paraglider Pilots on Club Frequency and send for EMS
- Call Ham Radio Repeater Network (See Handout)

A Open Airway – Remove Helmet and chin strap (Suspected Neck Injury use Jaw Thrust)

B Normal Breathing (Check for rise and fall of chest, use hand or listed for breathing)

C Circulation and Start CPR if No Pulse if present (Quick check for uncontrolled bleeding and use tourniquet if required)

- CPR 30 Compressions / 2 Breaths

D Attach Defibrillator if available

Vital Signs: including vital information

- age
- sex
- blood pressure
- heart rate (pulse rate - carotid easiest to find - regular, irregular, strong, weak, faint)
- temperature (patients colour) i.e. pale, clammy
- respiratory rate – breathing rate (regular, Irregular even uneven, unlabored, labored, symmetrical, asymmetrical)
- height,
- weight
- neurological status (LOC) Level of Consciousness

Example: we have a 33 yr old 185cm 100kg male BP 90/40 pulse 100 weak, cold and clammy to touch, respiratory rate 20 and shallow. Oriented x 4.

First Address Uncontrolled Bleeding

General Assessment for uncontrolled bleeding. If uncoloured Arterial (Bright Red) bleeding use Tourniquet on extremity above the injury sight. For general non arterial bleeding apply direct pressure to wound to slow bleeding. Use Compression dressing if available.

It is important to stop severe bleeding quickly before a thorough Head to Toe Physical Assessment as the patient can bleed out in a matter of minutes and go into hypovolemic shock and cardiac arrest if the bleeding is not controlled.

Severe Bleeding - things to look for include blood pooling on clothing so look under jacket pants etc for blood and severe angulated fractures as they are usually a source of severe bleeding. A closed severe fracture may also sever an artery and can cause severe bleeding in a extremity and

result in severe oedema and loss of pulse distal to the fracture. We will discuss this later. Also Pelvic Fractures need quick assessment and stabilization to avoid loss of blood into the pelvic cavity.

HEAD TO TOE PHYSICAL ASSESSMENT

Objective:

A systematic head-to-toe survey used to detect problems that are not always obvious and do not necessarily pose an immediate threat to life but could become serious; uses precise responses to specific stimuli to assess presence and extent of damage to the central nervous system.

Head:

- Carefully remove paragliding chin strap and helmet for head and neck evaluation unless cervical spine fractures are suspected. The action of removing the helmet with severe cervical spine injuries could result in further injury or even death. Use mechanism of injury for example head first impact involving a hang-glider. If in doubt leave the helmet on until a complete head to toe is completed.
- Scalp: Run fingers over scalp without applying excessive pressure, assess for any deformities/abnormalities, bleeding.
- Facial Structure: Assess for deformity, asymmetry, swelling or bleeding and tenderness, check sensation to different areas of the face and record any irregularities.
- Eyes/nose/ears: Assess for CSF or bleeding, PEARL check pupils equal and reactive to light, size and ocular motor function. Check pupil reaction to light with a pupil torch. Enquire about any hearing disturbances or abnormalities. Check for bleeding or CNS fluid discharge from the ear canal.

LOC (Level of Consciousness) GCS 1-15

Alert, Awake, Lethargic, Obtunded, Stupor, Comatose, Confused, Decerebrate, Decorticate, Oriented x 4: Person Place Time, Event Response to touch/voice

Neck:

- Assess cervical spine for mid-line tenderness, pain or obvious deformity.
- Prevent movement when assessing the neck of the patient.
- Assess if swallowing action is present visually, by instructing patient to swallow.

Shoulders:

- Palpate the shoulders bony parts and assess for deformity, crepitus, bruising and swelling/pain.
- Apply gentle restraining force to the patient's shoulders, and instruct him/her to shrug shoulders, assessing strength and equality of muscle action.
- Shoulder dislocation presents as obvious anterior/inferior (Forward and downward) dislocation of the humerus upper arm bone with the scapula shoulder joint.

Chest:

Get the patient to inhale deeply:

- Assess for deformity, tenderness, bruising and paradoxical movement, look for open/sucking chest wounds, palpate the chest wall.
- Auscultate all sites if you have a stethoscope. . Check respiratory rate – breathing rate (regular, Irregular even uneven, unlabored, labored, symmetrical, asymmetrical)
- Check for injuries/bruising
- Check sensory reaction to touch, comparing left to right side, ask patient to verbally identify area being touched without visualizing the action.

Abdomen:

- Assess for injury, bruising, distension, rigidity, and deformity. Palpate abdomen while assessing for any indication of discomfort.

- Assess sensory function to touch, and get patient to verbally identify area being touched.

Pelvis:

- Check pelvis for stability, by applying gentle downward pressure.
- Check for bleeding, tenderness, deformity, and abnormal positioning of legs and hips.
- Check sensory function on opposite sides.
- Pelvic fractures are a common Hang-gliding and paragliding injury and requires immediate stabilization of resulting bleeding into the abdominal cavity and responding shock and death can occur. If pelvic fracture is suspected check for Femoral pulse.

Limbs:

- Is severe bleeding is present determine if it is venous or arterial. If Arterial spurting is present apply direct pressure followed by a tourniquet above the fracture site.
- Palpate limbs, assess for deformities, open or closed fractures, crepitus, swelling, bruising and needle marks.
- Test strength and motor functions by applying gentle restraining force while instructing the patient to push and/or pull against your hands.
- Assess range of movement.
- If there are any positive findings like a suspected fracture check pulse distal – away from the fracture. Radial, Brachial, Popliteal, Posterior Tibial, Pedal. If you have a severe angulated fracture and no pulse is found below the fracture you will need to move the extremity gently until you can get a pulse.

TREATMENT OF COMMON INJURIES ASSOCIATED WITH PARAGLIDING AND HANGGLIDING ACTIVITIES

Contusions: (Soft tissue bruising.)

- Initial treatment for contusion should include rest, icing the affected area for 20 minutes, and applying a compression wrap to help minimize swelling. If there is an accompanying open wound, keep the area clean and bandaged.

Sprain/Straig:

This table explaining the differences between strains and sprains.

Sprains	Strains
Torn or twisted ligament (tissue that connects the joints)	Overstretched or torn muscle (also known as a pulled muscle)
Most common in: wrists, ankles, thumbs, knees	Most common in: knees, feet, legs, back

Sprains and strains are common injuries affecting the muscles and ligaments. Most can be treated without seeing a GP.

Common Paragliding and Hang-Gliding Sprains to the wrists and ankles are the most often seen and the possibility of fractures must be evaluated.

Check if you have a sprain or strain

It's likely to be a sprain or strain if:

- you have pain, tenderness or weakness – often around your ankle, foot, wrist, thumb, knee, leg or back
- the injured area is swollen or bruised
- you cannot put weight on the injury or use it normally
- you have muscle spasms or cramping – where your muscles painfully tighten on their own

How to treat sprains and strains yourself ON the Hill:

Immobilize the injured area. If it is a ligamentous sprain or a Muscle strain Immobilize as if it were a fracture and do not weight bear. Follow the four steps below after assistance from the flying site.

For the first couple of days, follow the 4 steps known as **RICE** therapy to help bring down swelling and support the injury:

- **Rest** – stop any exercise or activities and try not to put any weight on the injury.
- **Ice** – apply an ice pack (or a bag of frozen vegetables wrapped in a tea towel) to the injury for up to 20 minutes every 2 to 3 hours.
- **Compression** – wrap a bandage around the injury to support it.
- **Elevate** – keep it raised on a pillow as much as possible.

To help prevent swelling, try to avoid heat (such as hot baths and heat packs), alcohol and massages for the first couple of days.

When you can move the injured area without pain stopping you, try to keep moving it so the joint or muscle does not become stiff.

Laceration:

How to Treat a cut (Laceration)

It is important to clean a laceration and close it within 12-24 hours to reduce the risk of scarring and infection which could be life threatening. Time to Medical Care determines the treatment required.

- Apply direct pressure to the wound. Use gauze, a clean cloth, plastic bags, or, as a last resort, a clean hand. If your wound bleeds through the gauze or cloth, do not remove it. Add more gauze.
- If possible, elevate the wound above the heart. This will make it harder for blood to flow to the wound.
- Do not tie a tourniquet around an affected limb. This may cause more damage.
- If bleeding stops, let some water run over the wound. Tap water is safe to use.
- If muscle, tendon, bone, or organs are exposed, do not try to push them back into place.
- If you are feeling faint, lie down or sit with your head between your knees.

When Do You Need Laceration Repair?

If your cut looks shallow, small, clean and isn't bleeding, you may not need medical care. Antibiotic ointment and a bandage will be enough.

Wounds that may need medical repair have:

- Exposed muscle, fat, tendon or bone
- Dirt and debris in the wound, even after cleaning
- Feeling as if something is in the wound
- Bleeding continues after applying direct pressure for 10-15 minutes
- Jagged or uneven edges
- Depth more than 1/8 to 1/4 inch deep
- Location on area of high stress (joints, hands, feet, chest)
- Possible intense scarring

Laceration Repair: Treatment Options:

Dermabond or cyanoacrylate adhesive,

This special glue holds a wound together. You can use **Dermabond** or cyanoacrylate adhesive on your face, arms, legs and torso, but not for lacerations over joints, lips, deep cuts or most hand and foot lacerations as there are too many sweat pores.

How Dermabond Works

You hold the cut shut for 60 seconds, while you apply three thin layers of **Dermabond** or cyanoacrylate adhesive over the area. You may feel warmth as the glue sets. A breathable non-adhesive bandage should be placed over the area over the wound.

- **Dermabond** will fall off in 5-10 days.

Dermabond or cyanoacrylate adhesive glue sits on top of the laceration, not in it. You must avoid getting glue into wounds as this may prevent them from healing properly and create scarring.

Steri-strips

You can use these adhesive strips to close wounds that are clean, shallow, have straight edges and are easy to push closed.

- Steri-strips will typically be removed after 5-10 days or fall off on their own.

Stitches

You can use stitches for deep, bleeding wounds with jagged edges or exposed fat or muscle.

Getting Stitches

First, clean the cut with water and hexachlorophene if available. Betadine needs to be well diluted if used.

You will need to stitch the wound shut, clean it with water or saline, apply antiseptic and cover with gauze or a bandage. Additional instruction is needed for applying sutures properly.

- Stitches will be removed after 5-14 days.

Fractures: Types

Simple: Local Pain, angular deformity

Compound: Bleeding, often bone protrusion, angular deformity

Fracture Symptoms and signs – Not all may be present

- pain
- swelling
- deformity of the injured area (when compared with the uninjured side of the body)
- loss of normal function of the injured part
- discoloration of the skin (i.e. blueness) or bruising
- a wound if it is an open fracture
- altered sensation – e.g. 'pins and needles' – if a nerve is under pressure
- a grating sensation if injured bone ends are rubbing together
- patient may have heard/felt the bone break

Fracture treatment:

- Expose the injured limb by using scissors to cut away or removing clothing to check for simple or compound fracture – presence of bleeding. Often with compound fractures the bone will draw itself back under the skin.
- Check all limb surfaces for bleeding, bruising or swelling.
- **Stop any bleeding.** Apply pressure to the wound with a sterile bandage, a clean cloth or a clean piece of clothing. Use OLAES Modular Compression Bandage if possible.
- Check for a Distal Pulse – A pulse below the suspected fracture site.
- A fracture can sever an artery and this is life threatening. If **Bright Red Spurting Blood** is present a Pressure Bandage like a OLAES may be necessary. Wound Packing with ChitoGauze may also be warranted. If these measures do not immediately control the bleeding a **Tourniquet** application above the fracture sight may be warranted. Once you apply a Tourniquet do not remove in and notify EMS.
- If EMS services are not readily available gentle movement of the angulated fracture may be necessary to restore blood supply to the limb and to obtain a distal pulse.
- **Immobilize the injured area.** Don't try to realign the bone or push a bone that's sticking out back in. If an exposed bone is present cover the protruding bone with a wet sterile dressing. If you've been trained in how to splint and professional help isn't readily available, apply a splint to the area above and below the fracture sites. Padding the splints can help reduce discomfort. Use of a Foam Aluminum Splint can be used with Crepe or other bandage material to hold splint in place. Use padding as needed. After applying the splint check for distal pulse.
- A Fracture can sever an artery and this is life threatening. If **Bright Red Spurting Blood** is present a Pressure Bandage like a OLAES may be necessary. Wound Packing with ChitoGauze may also be warranted. If these measures do not immediately control the bleeding a **Tourniquet** application above the fracture sight may be warranted. Once you apply a Tourniquet do not remove in and notify EMS.

- Be aware that a closed fracture can also sever an artery and result in rapid swelling (pooling of blood) below the fracture site. This is usually associated with a person going into shock, loss of blood pressure and the absence of a pulse below the fracture.
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- **Apply ice packs to limit swelling and help relieve pain.** Don't apply ice directly to the skin. Wrap the ice in a towel, piece of cloth or some other material.
- **Treat for shock.** If the person feels faint or is breathing in short, rapid breaths, lay the person down with the head slightly lower than the trunk and, if possible, elevate the legs.

Suspected Pelvic Fracture:

What causes a pelvic fracture?

Most pelvic fractures happen during high-speed accidents (such as car or motorcycle crashes) or falls from great heights (ie Paragliding). P fractures may occur during high-impact athletic activities.

Examination / what are the symptoms of a pelvic fracture?

The main symptom of a pelvic fracture is pain in the groin, hip or lower back, which may get worse when walking or moving the legs. Other symptoms may include:

- Pain on pressing bilaterally on the Iliac Crests.
- Abdominal pain
- Numbness or tingling in the groin or legs
- Bleeding from the vagina, urethra (the tube that carries urine from the bladder to the outside of the body) or rectum (the chamber that contains solid wastes from the large intestine until they are eliminated outside the body)
- Difficulty urinating
- Difficulty walking or standing

A stress fracture that occurs while jogging may cause pain in the thigh or buttock.

How is a pelvic fracture diagnosed?

A pelvic fracture is usually diagnosed by the presence of bone tenderness, difficulty walking or doing other movements and any loss of nerve function in the lower part of the body. There may be injuries to organs within the pelvic ring such as the intestines, kidneys, bladder or genitals. An X-ray will show the fracture.

Treatment

Traditional teaching advises that the emergency management of pelvic fractures includes **internal rotation of the lower limbs to reduce the pelvic volume and circumferential wrapping of a sheet (or your 2" wide Paragliding strap or the waist strap from your Paragliding Rucksack) around the pelvis as a sling.** Use Padding on the outside and a Paragliding 2" Strap works well. Bring the outer pelvic bones together and snug up the strap. A flexible Splint can be used under and around the sides of the pelvis to distribute the force of the strap.

An alternative is a **Promethius Pelvic Splint.**

The Pelvic Splint consists of a central strap made of neoprene with two straps running through a central buckle. When aligned around the pelvis and a compressive force is applied, stabilisation of the pelvis can be achieved.

See <https://www.youtube.com/watch?v=QvBBd2r4kxg>



Suspected Spinal Injury or Possible Fracture:

Treatment and Evaluation:

Do not move them and tell them not to move, unless they are in immediate danger. Call 111 or activate your InReach device for emergency help or ask someone else to call for you. Steady and support their head, so that their head, neck, and spine are in a straight line to try and prevent further damage. Disconnect their Paraglider or Hang-glided .

Key points

- The spinal cord runs through the center of your spine. It is like a system of telephone wires that conduct messages from your brain, through your nerves, to all parts of your body. This means damage to it can affect a number of body functions.
- The amount of function lost tends to relate to the level in your spinal cord where the damage takes place.
- Damage to your spinal cord can be caused by trauma, such as car accidents or sporting injuries. There are also non-traumatic causes, such as transverse myelitis, multiple sclerosis, cervical myelopathy, infections, tumors, disturbance to the blood supply and motor neuron disease.
- Severance (complete cutting) of the spinal cord does permanent damage. However, given the right sort of equipment and adaptations to buildings, people with spinal cord injury can do most things that the rest of the community can and live fulfilling lives with all levels of spinal injury.
- Leading a healthy lifestyle can help to avoid or minimize health issues that can arise from long-term immobility, such as pressure sores or urinary tract infections.

What are the symptoms of a spinal cord injury?

The symptoms experienced are different for everyone and depend on the level at which the spinal cord is damaged. They can include:

- loss of feeling or numbness
- loss of mobility (motor function)
- tenderness and/or bruising in the skin over the spine
- irregular shape or twist in the normal curve of the spine
- loss of bowel or bladder control
- loss of temperature control
- severe pain in your neck, head or back
- paralysis or difficulty with balance or walking
- stinging sensations
- oddly positioned or twisted neck or back, irregular shape in the normal curve of the spine
- difficulty breathing at higher levels near your neck.

Common Paraglider Spinal Fracture's include compression and burst fractures to the lower thoracic and lumbar spine and pelvic fractures. These occur when falling a distance and landing on the buttock. Paraglider harness designs with foam and air bags reduce the chance of these kind of fractures.

Common Hang-glider Spinal Fracture's include Cervical and Atlanto-Occipital neck fractures due to landing head first. Wrist and arm fractures are also common. A Hang-gliding suspected cervical fracture is much more severe than those associated with Paragliding and great care must be taken in stabilizing the patient. Neck Stabilization is imperative.

Early (acute) stages of treatment

In the emergency room, doctors focus on:

- Maintaining your ability to breathe
- Preventing shock
- Immobilizing your neck to prevent further spinal cord damage

Early (acute) stages of treatment of spinal cord injuries?

- **Minimizing further injury to your spinal cord**

- If you suspect a spinal injury and need to perform first aid, do not move the injured person as permanent complications can result. Call 111 for emergency medical assistance or activate your InReach/PLB. Tell EMS you suspect a spinal cord injury and request Air Ambulance Support..
- Keep the person's head, neck and back aligned and prevent unnecessary movement.
- Provide as much first aid as possible without moving the person's head or neck.
- Maintaining an open airway to assist in their ability to breathe
- If the person is wearing a helmet, don't remove it.
- In hospital, further steps will be taken to stabilize the spine. This can include traction or braces.
- Sometimes surgery is needed and any other injuries need to be treated.

Evaluation and treat for shock:

Shock is a critical condition brought on by the sudden drop in blood flow through the body. Shock may result from trauma, heatstroke, blood loss, an allergic reaction, severe infection, poisoning, severe burns or other causes. When a person is in shock, his or her organs aren't getting enough blood or oxygen. If untreated, this can lead to permanent organ damage or even death.

Signs and symptoms of shock vary depending on circumstances and may include:

- Cool, clammy skin
- Pale or ashen skin
- Bluish tinge to lips or fingernails (or gray in the case of dark complexions)
- Rapid pulse
- Rapid breathing
- Nausea or vomiting
- Enlarged pupils
- Weakness or fatigue
- Dizziness or fainting
- Changes in mental status or behavior, such as anxiousness or agitation

Treatment of shock:

- Lay the person down and elevate the legs and feet slightly, unless you think this may cause pain or further injury.
- Keep the person still and don't move him or her unless necessary.
- Begin CPR if the person shows no signs of life, such as not breathing, coughing or moving.
- Loosen tight clothing and, if needed, cover the person with a blanket to prevent chilling.
- If uninjured elevation of the lower extremities 20-30cm will help blood flow back to the core areas.
- Don't let the person eat or drink anything.
- If you suspect that the person is having an allergic reaction, and you have access to an epinephrine autoinjector, use it according to its instructions.
- If the person is bleeding, hold pressure over the bleeding area, using a towel or sheet.
- If the person vomits or begins bleeding from the mouth, and no spinal injury is suspected, turn him or her onto a side to prevent choking.

Deceleration Traumatic Injuries:

Injuries encountered in deceleration (falling from a height and impacting on the ground) can range from **shock, concussions, abrasions, sprains, skin tears, and internal-organ ruptures to fractured bones, respiratory and circulatory arrest, haemorrhages, and organ damage.**

The chest and abdomen are vulnerable to impact stress. Compression of the rib cage and breastbone may produce fractures. The impact wave itself can cause displacement of the heart, tearing of the large vessels, rupture of the heart, and displacement of the uterus, spleen, stomach, and liver. Membranes supporting the internal organs usually tear if organ displacement occurs.

These type of injuries are life threatening and need to be evaluated. The major cause of death to a paraglider or hang-glided pilot is from injuries associates with deceleration. Tearing of the liver, spleen or major vessels of the heart can cause internal bleeding.

Signs & Symptoms.:

Rapid decrease in vital signs.

Increase in heart rate and often a thready or light palpated pulse

Decrease in blood pressure

Abdominal or chest pain on palpation

Loss of consciousness

Signs of shock

Treatment:

Emergency Evacuation to hospital (Activate InReach/PLB) - Notify EMS and get Air Ambulance support ASAP

If available IV fluid replacement

Treat for Shock.