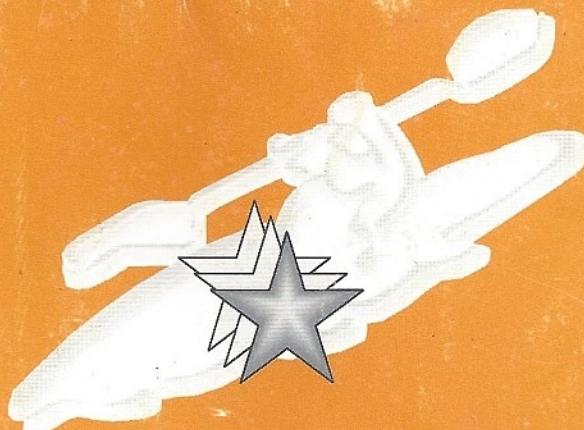




People's Association

Sea Sports Club



3 Star Award

Handbook

CONTENT

Syllabus	1
Boat Design Characteristics	5
Paddle Design	11
First Aid	19
Hyperthermia	28
Hypothermia	30
Four Elements of Eskimo Roll	34
Towing	40

3 STAR PERSONAL SKILL TRAINING COURSE

A four sessions training course to refine the personal skills of 2 star paddlers and to introduce advanced paddling manoeuvres. Trainees are required to log 5 journeys (at least 8 km) and a period of consolidation before applying for assessment.

Pre-entry requirement

Two Star Personal Skill Award

Venue

Sheltered water (not a swimming pool)

Trainer/Assessor

Level Three Coach or higher

1. THEORY

- 1.1 Boat design characteristics
- 1.2 Paddle design characteristics
- 1.3 Choice of equipment for different situations
- 1.4 Basic first aid
- 1.5 Hypothermia and hyperthermia
- 1.6 Dehydration

2. PRACTICAL

2.1 Lifting, carrying, launching and coming ashore.

Demonstrate good lifting and carrying techniques. Understands different approaches to launching and coming ashore.

2.2 Efficient forward paddling. Demonstrate efficient forward paddling. Good trunk rotation with extended front arm, reasonably high paddling action.

2.3 Reverse paddling. Demonstrate accurate and efficient reverse paddling over a distance.

2.4 Turning while on the move. Turn the kayak quickly with the minimum loss of forward speed by means of a low brace turn and by a bow rudder.

(a) **Low brace turn.** The turn is induced by applying a sweep stroke on the opposite side to the turn, followed by a confident edge into the turn. With the back of the blade trailing on the water surface to provide support.

(b) **Bow rudder.** Demonstrate that the kayak can be pivoted around the paddle. The blade should be placed in the water at about level with the knees, with the drive face towards the boat but the leading edge angled away from the bow. Trunk rotation should be in evidence, the top arm across the top of the head. The boat is driven around the paddle by use of the opposite knee.

2.5 Moving sideways, static and on the move. Move the kayak sideways in both directions by means of sculling draw, draw on the move and hanging draw.

(a) **Sculling draw.** Body well rotated. Paddle shaft vertical, blade deep in the water. An effective sideways movement must be in evidence without the kayak turning.

(b) **Draw on the move.** The kayak, while moving forward, is pulled side-ways from its course without turning (as if to avoid an obstacle) using a draw stroke.

(c) **Hanging draw.** The kayak is moved sideways over a greater distance than that of a draw stroke on the move. With the kayak moving forward at a good speed, the paddle should be placed out to the side, level with or just behind hip. The kayak should move sideways without the paddle moving in relation to the boat, or the kayak turning.

2.6 Support strokes. Demonstrate a range of support techniques in order to maintain balance in varied circumstances. Demonstrations should include low and high recovery strokes as well as sculling for support on both sides.

(a) Sculling for support. The paddle is kept low and near horizontal, with evidence of confident commitment to the paddle.

(b) Recovery strokes. Demonstrate both high and low recovery strokes with kayak well off balance. To be performed while on the move and forward paddling to be maintained thereafter.

2.7 Deep water rescue. Take charge of a deep-water rescue without assistance. Demonstrate the role of rescuer and victim.

2.8 Towing and use of towline. Demonstrate knowledge of towing a kayak using a towline without assistance and be able to release in an emergency. The candidate must indicate that he or she is aware of the inherent dangers of towing.

2.9 Eskimo rescue. Eskimo bow rescue and paddle presentation. A confident capsiz with the rescuer moving in from 5 metres distance. Demonstrate the role of rescuer and victim. The rescuer must not approach at right angles to where the hands or body are located.

2.10 Swimmer to kayak rescue in deep water

2.11 Kayak to swimmer rescue. Demonstrate both bow and stern carry.

2.12 Kayak to kayak rescue.

2.13 Rolling. Demonstrate three consecutive reliable rolls in flat water.

3. Pre- assessment requirement

Produce logbook-showing evidence of at least five different journeys of at least 8 km.

BOAT DESIGN CHARACTERISTICS

Boats can have a wide variety of characteristics that affect their performance. The designs are continuing to evolve, primarily as a result of improvements in technology, but the changes stems from the competitive arena where racers have been seeking lighter, stronger, more functional craft.

Paddlers can now select boats that are geared to their strength, body size and paddling desires. More specialized boats are available to people with specific interests, whether it is racing, touring or playing in the river.

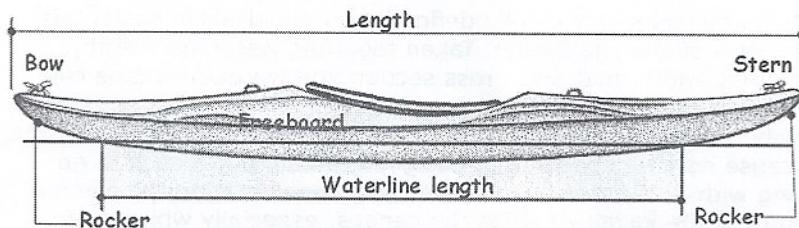
Design factors rarely can be defined on a stand-alone basis, but are parts of a whole design. Taken together, waterline length, waterline width, mid-ship cross section and waterline shape can roughly describe a particular boat.

Kayak design becomes a little bit more complex than canoe design, because now we are not just designing a hull, but a deck to go along with it. We also have to take into consideration the comfort and fit of the kayak whereas the canoes, especially whitewater canoes, are left up to the paddler to make comfortable via the outfitting

Length refers to the overall length of the boat from end to end. Note that all boats have two lengths: - overall length (end to end) and waterline length (the level which the boat sits on the water). The length of the kayak has a tremendous effect on its tracking, maneuverability and stability. Longer kayaks has a number of advantages: - they are usually easier to paddle, more stable with the same amount of weight and capable of carrying heavier loads with less loss of performance. They also track better, move faster and glide further with each stroke, allowing greater efficiency with less effort. These attributes are especially important on calm water where turns are not involved.

A general rule is the longer your waterline (the actual amount of hull in the water) the faster your boat.

Rocker is the shape of the hull along the underwater keel line. How high up does the bow and stern rise from the midsection of the boat? Think of it in terms of resistance. A boat with a lot of rocker has less lateral resistance in the ends, and thus is easier to spin around. Too much rocker and the boat become harder to control. It will turn with every stroke. Again, whitewater boats have more rockers. Long and touring boats tends to have less rocker and more defined keels, both which make them track (go straight) better. The better tracking, the more efficient your stroke can be by having to do less "steering" strokes (lateral strokes), thus providing you with help in speed.



Beam (width) is measured at the widest point along the length. The width of the boat has a definite influence on the boat's handling characteristics. The primary function of width is stability. Wider boats are usually more stable and are often recommended for beginners. But handling is sacrificed for that extra width and the kayak does not work well in current. A narrower boat increases the boat's efficiency because it brings the paddler's forward strokes closer to the centerline of the kayak.

Additional width adds to carrying capacity, but kayaks that are too wide require greater effort to paddle, simply because their hulls push more water.

Waterline width affects two things - stability and speed as they relate to length. Wider is more stable for a given cross section but reduces speed if length stays the same.

Volume

This is literally the amount of space occupied by the interior of the boat, which is sometimes expressed in terms of gallons or litres. A recreational whitewater boat will generally have a high volume, which is more comfortable and more buoyant and allows for more storage of gear. A slalom or squirt boat will have less volume in order to increase maneuverability and usually at the expense of comfort to the paddler.

"How much" as well as "where?" More volume around the cockpit provides a roomier ride probably a bit more comfortable. Lower volume in the ends allows the paddler to do more vertical moves (squirt moves, etc.), but may compromise control of the boat coming down the river.

A kayak is easiest to control when it is sitting on top of the water, thus less volume means the more the boat is under water and ultimately the less control the paddler will have.

Stern volume

Less volume in the stern means the paddler can force the stern under water more easily, this helps in surfing by letting the boater "shred" keeping the bow raised out of the water (water piles onto the stern deck pushing down giving the kayak a "teeter totter" effect bringing the bow up) and of course allowing retentive (i.e.. cartwheels) moves in a hole. Skilled boaters can take this to extremes and go vertical or "squirt" the stern. The downside to less volume in the stern is in running a drop. You have a tendency to sink the stern (momentum plus gravity plus water piling on the stern deck) and shoot you into a vertical position. In radical designs, the stern deck may be sitting just at the waterline where it is vulnerable to cross-currents and making just staying upright difficult. Just the right amount of stern volume can allow a kayak to be forgiving in most situations and still shred a wave to pieces.

Bow area

The same holds true for the bow as it does for the stern, but it's a bit easier to give the bow lift while keeping that low volume feel to your kayak. Lift helps keep that bow above water when running rapids and surfing waves helping to keep control.

Mid-ship area

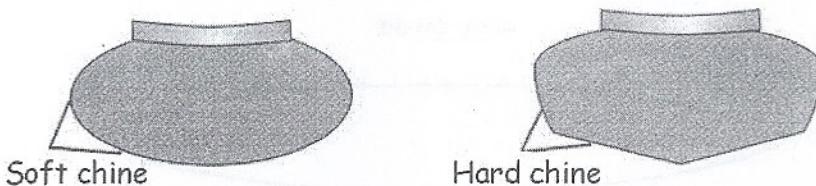
Higher volume in the mid-ship or cockpit area gives the paddler room, and keeps the boat from washing out of a hole while playing. However too much room makes for a sloppy fit and the boat becomes harder to paddle. The designer's expertise is required to present as much volume as possible without interfering with the other functions and features of the boat!

Midship cross section

This variable is responsible for the side-to-side feel (or stability) more than any other factor. The flatter and squarer the middle of a boat the more stable it will feel in calm water. This shape is stable but slower than a rounder hull and can be edgy in cross currents. The rounder hull also has some advantage in cross currents being less likely to be "grabbed" going in and out of eddies. Most hulls are neither truly flat nor round but a combination of the two forms depending on the intended use. Recreational boats tend to be flatter and performance boats tend to be rounder or shallow arch hull forms. Whitewater boats come in all combinations and usually require some practice to paddle well.

Chine

The transition between the bottom of the kayak and the sides is called the chine. An abrupt, nearly right angle transition is called a hard chine and a smoother, more rounded one is a soft chine. Hard chine is trickier and appears on high performance whitewater boats. Most boats use softer chine for a more forgiving disposition.



Flare

The angle of a kayak's sides outward is described as having flare. Kayaks with flared sides have greater stability but are more difficult to Eskimo roll.

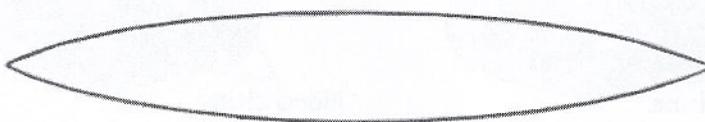
Hull Shape

Symmetrical hull means that the front and the back of the kayak have the same shape. Symmetry boat affects not only the efficiency of the boat as it moves through water but also its ability to turn. Symmetrical boats are better for quick maneuvering as in negotiating small streams or whitewater.

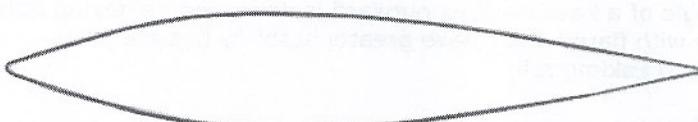
An asymmetrical hull meaning the front and back are not of the same shape. Asymmetrical boats are usually lengthen and streamline at the bow for more efficient and faster passage through the water. Directional control is increased, but turning ability is reduced.

There are two types of asymmetrical shapes: **fish form and Swedish form**. Fish form has more volume fore (ahead) of the midpoint while the Swedish form has more volume aft (back) of the midpoint. Both design work well.

HULL SHAPE



Symmetrical shape



Asymmetrical shape

Flare. Flaring in a kayak more often occurs in the bow and prevents waves from rolling into the boat. It describes the shape of the boat from the hull up. It may start narrow and increase in beam as it rises up the sides of the boat. Most obviously this would help to shed water away from the boat when riding through and over waves. Also think of it in terms of volume. At the bottom of the boat (in the ends to be specific) the volume will be less than the volume toward the top of the boat. This will give the boat some lift as it is paddled in rough conditions. A whitewater boat may already have a lot of volume down below, thus already riding higher as where a touring boat will tend to have less (for tracking and speed purposes) but increase its volume at a more rapid pace towards the gunwale.

Paddle design characteristics

Paddles are your means of power and come in different shape and sizes. Likewise the designs continue to evolve as a result of improvement in technology as well as paddling style and the requirements in the different discipline of canoe sports.

Paddlers can now select paddles that are geared to their strength, body size and paddling desires. More specialized paddles are available to people with specific interests, whether it is racing, touring or playing in the river.

There are three considerations that may help determine which type of paddle could be right for you:

1. The type of paddling, whether it will be touring or whitewater.
2. Your height and body strength.
3. The width and height of the seat of your kayak. A wide or high seat kayak will often need a longer paddle to effectively reach the water.

Once these three areas are considered, then you can look at the three major differences in paddle characteristics:

- Blade length and shape
- Shaft length and shape
- The materials used to construct the paddle

1. Blade length and shape

Paddle blades can be long, short, narrow, wide, feathered, unfeathered, symmetrical, asymmetrical, spooned or dihedral. Each shape has its benefits. A wide blade with a larger surface face can provide greater acceleration, but will also create more resistance in the water. It takes more effort to use a large-bladed paddle than a smaller one. This can be an important factor for the infrequent paddler, as touring is more about endurance than it is about speed. A long, narrow blade will take more strokes to move through the same amount of water, but the paddler will be less tired while doing it.

There are three distinct aspects to blade length and shape:

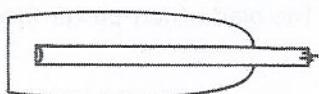
a) Blade outline —

- Looking at the blade flat on.

Most touring kayak paddle blades are asymmetrical in shape, where most white water kayak paddle blades are symmetrical. White water paddlers are learning, though and more asymmetrical white water kayak paddles are being developed and marketed all the time.

Draw a line down the centerline of the paddle shaft, through the center of a blade. If the blade halves on either side of the line are the same (actually a mirror image of each other), that blade is symmetrical. If the two sides are different, the blade is asymmetrical.

Blades can be either symmetrical or asymmetrical. Typically, touring paddles are long, narrow and symmetrical. Some paddlers find an asymmetrical paddle reduces the twisting on the paddle shaft while stroking, because it evens the amount of water on each side of the submerged paddle.



Symmetrical Shape



Asymmetrical Shape

The two blades indicated above are fairly typical shapes. There are lots of different symmetric shapes being made today, as well as many different asymmetric shapes.

b) Lengthwise curve —

- Looking at the blade from the side of the paddle.

A paddle blade can have either a flat or curved shape when looked at edgewise, from the side of the paddle. Varying amounts of curve are possible and different places on the blade might have different amounts of curve. The biggest advantage of the flat blade is forgiveness for beginners and the biggest disadvantage is probably lack of grip on the water that more advanced paddlers prefer. Most kayak paddle blades are curved, but there are exceptions.



Blade Flat Lengthwise



Blade Curved Lengthwise

The above two pictures show a flat blade and a curved blade from the side. A blade is either flat or it's curved and varying amounts of curvature are possible. The above curve is exaggerated greatly.

c) Cross section —

- As if you cut the tip half of the blade off and looked at the cut edge.

Several different cross sections are available on paddle blades. Typical sections are flat, spooned, dihedral and wing. The ribs indicated below are typical, some blades may have them on one or both sides and other blades may not have any appreciable ribs. As a general rule (there are always exceptions) ribs on the side of the blade facing the back of the boat (power face) have a detrimental effect and ribs on the other side of the blade (non-power face) do not matter very much.



Flat Blade Above



Dihedral Blade Above



Spoon Blade Above



Wing Blade Above

The above cross sections are typical, not specific. A flat blade is flat, but a given blade might be more spooned or more dihedral than another spoon or dihedral blade. The dihedral, spoon and wing above are exaggerated a little for clarity. The amounts of spoon or dihedral will probably vary in different parts of the blade surface. There might even be combinations of two or more of each section on the same paddle blade. For instance part of a blade is flat and the rest is dihedral, or there could be a little bit of spoon in an otherwise flat blade. The side of the blade that faces the rear of the boat (power face) points to the top of the screen in the above drawings.

A spooned paddle has a curled or cupped face that increases the power of a stroke, while a dihedral paddle has a type of tapered nose in the middle of the face that helps direct water around the paddle.

There are advantages and disadvantages to each sectional shape. Both spoons and wings offer a very powerful stroke, but are also very difficult to control during a stroke, especially for beginners. Dihedrals can be very forgiving, but many are so forgiving that

they limit the capabilities of the paddler after the beginner learns the basics. Blades that are essentially flat across the face seem to offer the best balance between forgiveness, power and control. There is a distinction between curved and spooned blades here. A true spoon blade is curved across the face, as well as lengthwise, like a soup spoon. Some blades are curved lengthwise, but are flat across the face. A curved blade is not necessarily a spooned blade. In fact, most blades that are called spooned, are not. A true spoon will hold water on the surface, where it will roll off of a flat blade that is curved lengthwise, only.

Wing Paddles

There have been a couple of new innovations in paddle form recently. The first was wing blades for Olympic sprint style kayak racing and that was later followed by shaft with weird bends in them for white water slalom racing. Both concepts have gone through design modifications and are now used in upper level recreational flat water and white water paddling.

Wing Blades

The "wing" blades found on kayak paddles are so named because they generate lift, like an airplane wing, when used properly. They are very tricky to learn to use properly, because the deep spoon in them makes a high brace and most maneuvering strokes very difficult. These blades were designed about 10 years ago to enhance all-out forward speed in a straight line. The performance advantage is actually not real great, two to four percent, maximum and it takes a very good paddler to utilize them to any definite advantage and paddler of close to Olympic caliber to take them to their max.



Flat Blade



Wing Blade

The cross section drawings above are from the earlier shapes chapter. The top surface is the one that faces the rear of the boat, the power face.

Even though some blade modifications are advertised as suitable for recreational use, wing design is still in the infancy. After you gain some experience, try one out and see if it makes any

difference for your use and paddling style. Some of the "good" recreational sea kayakers now use wings for at least some, if not all of their paddling. My guess is that the subconscious reasoning is that they simply want to be seen using a wing paddle. They only benefit from them when out in good to perfect flat-water conditions. Otherwise they spend more time than necessary trying to stay upright in the boat.

2. Shaft Length and Shape

As we touched on earlier, a longer paddle is needed by taller paddlers and paddlers of tall or wide boats. Often, a sit-on-top kayak will need a longer paddle. A long paddle may provide more power, but will also create more resistance. Whitewater kayakers will prefer shorter paddles for their increased maneuverability, quickness and strength.

While most paddle shafts are straight, there are several bent-shaft models that may increase the paddler's comfort as well as provide for a stronger, more effective stroke.

What Feather Angle?

Feather angle refers to the blade plane configuration of a kayak paddle. When the two blades are in the same plane as indicated by being able to lay it with both blades flat on the floor at the same time, it is unfeathered, (also called no-feather or zero feather). A feathered paddle is indicated when the blades are at any angle away from the same plane and only one blade will lay flat on the floor at a time.



Unfeathered Paddle



Feathered Paddle

It can be right or left feather (see next topic) and at any angle up to 90°. The typical range of feather angles found is from a low of about 45° to 90° as the highest. I've heard of angles below 45°, but not seen any.

Blade Shape

**Double Torque Shaft Above****Crank Shaft Above****Modified Crank Shaft Above**

In the above drawings, the side of the paddle blade facing the top of the screen is the rear facing blade surface, the "power face."

Bent shaft kayak paddles are all compound bends (two or three bends in each hand grip area) and first started appearing around 1990. The theory for kayak paddles is to get the wrists at a more comfortable angle during the forward reach part of the stroke where the power is applied. A "double torque" shaft was developed to alleviate part of this wrist angle problem. However, the double torque shaft also reduced the amount of reach out front, which is not good.

That lack of reach problem was repaired with a further modification called the "crank" shaft, which put the blade back in line with the section of shaft between the hands. Another later adaptation is the modified "crank" shaft where reach is extended a bit more and the blade is now in front of the shaft. Some think this is just an application of the "more is better" principle that introduces more problems than it solves. Others like them a lot. You might think that the bend might cause problems at the end of the stroke, but as little if any power is applied there, it seems to be okay.

All of these kayak shafts have advantages and disadvantages. For instance, the blade forward of the hands creates low bracing and back paddling problems. Again, all of these design concepts, except possibly the single bend canoe, are in their infancy and will be changing over the next several years. Bent shafts are much easier to learn to use effectively than a wing paddle. Like wings, any performance advantage is slight, probably not even as great as that of a wing. The modification is meant for paddling comfort, which will primarily help long-term performance.

Until techniques develop, straight shaft kayak paddles are probably better than bent shafts for all around use, but bents may be better for specific uses.

Paddle blades that are unfeathered have the blades parallel to one another. Feathered paddles have the blades turned at an angle to one another. This feathering allows for a more efficient stroke as the blade that is not in the water is leading into the wind with its narrow edge instead of the flat side, making for much less wind resistance (physics is cool). Some paddlers, especially beginners, find that the additional wrist-turning necessary to use a feathered paddle is uncomfortable and unnatural.

Materials Used In Construction

The materials used to construct the paddle will determine its weight, durability and flexibility. Paddles may be made of fiberglass, plastic, aluminum, graphite, Kevlar, carbon, or good-old-fashioned wood. Each type has its own feel as to weight and flex. Each paddler will have to consider the combination of weight, durability, flexibility and cost.

In the end, however, your personal preference as to which paddle feels the best may be the deciding factor in your decision.

FIRST AID

First aid is largely a matter of common sense, but it needs to be enlightened common sense. Total competence is only achieved through pursuing a course of training and studying the manual of the first aid services.

The basic principles are as follows:

- Keep calm
- Do not move the patient unless absolutely essential
- Seek professional help
- Deal with priorities
- Do not give food or drink
- Be firm but gentle - reassure the patient.

Minor accidents that require professional assistance should be dealt with by the nearest hospital with an accident and emergency department. For a serious accident, dial 995 for ambulance. Speak slowly, clearly and briefly. Give your location, name and address, the type of accident, and the number of casualties.

Dealing with priorities

In an emergency situation it is vital to establish the correct order of priorities. These are:

1. Breathing/heart stopped
2. Bleeding
3. Injuries
4. Shock

Treatment of wounds

In any case of external haemorrhage, cover the wound with a dressing and apply pressure directly on to it for at least 10 minutes. Do not remove the original dressing, but add further ones if necessary. Tie with a tight bandage, but do not tourniquet. The limb below the bandage should be warm and pink. Reduce blood flow by raising the limb and/or keeping it cool.

If there is a foreign body in the wound do not use direct pressure, but stop the flow of blood at a pressure point between the heart and the wound, as close to the latter as possible. Do not attempt to remove large foreign bodies as a massive haemorrhage may ensue.

Treatment for shock

Shock is a factor in all cases of injury or sudden collapse.

- Treat the cause if possible; stop any external bleeding; dress burns; reassure the casualty
- Lay the casualty flat with legs raised, unless she is unconscious when he should be placed in the recovery position
- Keep him warm enough to prevent heat loss
- Do not give anything by mouth because of there is a possibility of surgery and hence anaesthetics, will be needed; if the stomach is full, anaesthesia often produces vomiting and in the unconscious casualty, inhalation of vomit into the lungs
- Get the casualty to hospital as a matter of urgency.

If you cannot move the casualty (eg if spinal injury is suspected) watch his respiration carefully. Close the mouth and hold the jaw closed. Pull very slightly on the lower jaw to keep the tongue held forward. Do not leave a casualty alone in this position.

Other and minor accidents

Bites

From animals - clean the wound, stop the bleeding, visit the doctor or hospital casualty unit

From snakes - do not make an incision; kill the snake so it can be identified, make the casualty lie down, keep him cool and raise the limb to slow down the blood flow to the heart; remove to a doctor or hospital, but do not exert the patient

From insects - apply a soothing cream or calamine lotion.

Burns or scalds

Do not remove clothing adhering to the burn, or cover with ointment or spirits. Do not burst the blisters. For superficial burns wash immediately under cold, running water. Dry without rubbing. Cover with a dry sterile dressing. For extensive burns roll the casualty very gently, still clothed, into a clean sheet, Medical help must be obtained directly.

Foreign bodies

In the nose - do not meddle with tweezers or pointed objects; ask casualty to take a deep breath, block the other nostril, and breathe out hard; do not try this with small children - get to a doctor.

In the ear - a live insect can be rendered harmless with a few drops of castor oil; do not use tweezers or anything similar, but let the doctor remove the foreign body.

In the eye - do not let casualty rub the eye; keep the eye protected, preferably closed and free from movement, and get to a hospital casualty department.

Fractures

Immobilise the joint. Legs can be tied together with triangular bandages, ties, belts or scarves. Tie the knots on the unaffected side, padded with handkerchiefs or something similar.

Cramp

Cramp and "pins and needles" are often confused. Cramp is a painful spasm of the muscles, especially when the circulation is impaired in cold conditions. The pain may be so severe as to completely immobilise the victim. Normal treatment is to stretch the muscle out, against its contracting spasm and to massage it firmly towards the heart. Cramp usually occurs in the sole of the foot or the calf muscle, but any muscle of the body may suffer.

Pins and needles

These are caused by pressure on a nerve causing its temporary "death" and the consequent loss of any feeling or control of the part of the body normally controlled by that nerve. The common form of "pins and needles" among paddlers is in the legs nearly always caused through faulty design in the seat of the boat, when pressure on the pelvic bone cause the nerves of the legs to "die." The sensation is an aching limb, but is nothing like as painful as cramp. The cure is movement.

Head injuries

Anyone suffering a severe blow on the head, whether or not they become unconscious, should be seen by a doctor because of the danger of a haemorrhage. Signs to watch for are drowsiness, vomiting and unequal dilation of pupils.

Wounds and Major Bleeding

Definition of a wound

Abnormal break in skin/tissue

Permits blood to escape externally or internally

May allow germs to enter causing infection

Classification of wounds and their causes

- Incised/clean cut - knife
- Lacerated/torn - barbed wire
- Contused/bruised - fall
- Grazed
- Punctures/penetrating - dagger, fork
- Gunshot

Treatment of wounds with slight bleeding

- Firm direct pressure
- Elevate and support (unless a fracture is suspected)
- If dirty, wash (protecting wound with swab)
- Wipe outwards from wound
- Use swab once only
- Apply dressing pad and bandage

Treatment of wounds with severe bleeding

- Check for foreign bodies
- Direct pressure (5-10 min)
- Lay casualty down
- Elevate limb (unless fracture is suspected)
- Apply dressing, pad and bandage
- Check if bleeding is controlled
- If not, further dressing
- Immobilize
- Arrange for medical aid

Treating a wound with an embedded foreign body

- Do not attempt to remove a firmly embedded object
- Direct pressure must not be applied
- Apply pressure alongside wound and squeeze edges together

- Apply dressing
- Place pad/dressing pads to avoid pressure on foreign body
- Secure with bandage

Definition of a pressure point

An important artery can be compressed against a bone to prevent flow of blood beyond that point.

When and for how long it is appropriate to apply pressure at pressure point

- Only when arterial bleeding cannot be controlled by direct pressure, or when impossible to apply pressure successfully.
- Apply only while dressing, pad and bandage are being prepared and for **NOT LONGER** than 10 minutes.

The application of pressure to the pressure points

- Brachial point
- Sit casualty down
- Arm raised, elbow bent
- Fingers under arm
- Locate artery by feeling for pulse
- Compress
- Check radial pulse is absent

Femoral point

- Lay casualty down
- Knee bent
- Press with fist or heel of hand centre of groin against rim of pelvis

The Causes Of Internal Bleeding

- Broken bone
- Blow
- Bullet
- Stab wound
- Certain medical conditions

The Cases In Which Internal Bleeding May Remain Concealed

- Fractured vault of skull
- Bleeding into brain
- Bleeding into tissue around a fracture
- Bleeding from spleen, liver or other organs into abdomen (dangerous)

Shock

Definition

Condition arises from stress, injury or illness results in insufficient supply of blood to brain and other vital organs. Causing lessening of activities of vital functions of the body. Severity depends upon nature and extent of cause and varies from a feeling of faintness to death.

Causes

- Acute heart attacks
- Acute abdominal emergencies
- Severe bleeding
- Loss of serum - as in burns
- Loss of body fluid - as in vomiting
- Severe pain

Signs and symptoms

- Extremely pale
- Skin cold and clammy
- Profuse sweating
- May feel faint and giddy
- May feel sick and may vomit
- May complain of thirst
- May feel anxious
- Pulse rapid and feeble
- Breathing shallow and rapid
- May not be fully conscious

NOTE: Does not always show all of these at the same time.

Treatment

- Lay casualty down
- Deal with injury or cause of shock
- Keep head low and turned to one side
- If possible raise lower limbs
- If injury is to head, chest or abdomen:
 - Shoulders should be raised and supported with head turned to one side
- If vomiting is likely or casualty is unconscious:
 - Recovery position
 - Loosen clothing at neck, chest and waist
- If casualty complains of thirst:
 - Moisten lips with water
 - Protect with blanket or sheet
- if removal to hospital is delayed:
 - Record pulse and respiration details at 10 minutes intervals

When condition indicates that hospital or medical attention is needed DO NOT Waste time, remove to hospital quickly

- DO NOT Use hot water bottles
- DO NOT Give anything to drink
- DO NOT Move unnecessarily

Additional Notes

Shock is a killer, but not many people understand what causes it and how it works within the body.

Shock is a condition which arises from stress, illness or injury, which produces changes in which the circulation fails, either because the pressure or volume of circulating blood flowing to the vital organs - heart, brain, lungs and kidneys - is insufficient to keep them supplied with oxygen and functioning.

Hypovolemic Shock

Hypovolemic shock is loss of circulating blood volume caused by either severe bleeding, burns, fractures, intestinal obstructions, loss of body fluids - vomiting, diarrhoea or ascites peritonitis.

The body's reaction to this will be to reduce the blood volume in certain areas of the body, to supply maximum blood supply to the brain, heart and lungs.

Blood is withdrawn from the skin areas so that the person feels sick and may vomit. Blood is withdrawn from the legs, and produces the feeling of unstable legs. Some blood is reduced from the head, so that the person feels faint and giddy.

As there is less blood flowing around the body, the heartbeat becomes rapid but the supply is reduced: this produces a rapid but feeble pulse. Because the blood supply and breathing are inter-related the breathing will be affected. Due to a loss of blood volume the oxygen content in the blood is reduced: this produces a shallow but more rapid breathing. The kidneys in time will also close down due to arterial blood withdrawal: this could produce acute kidney failure.

Heat exhaustion

This is a condition caused by excessive loss of salt and water from the body. It is most likely in a hot environment where people are not used to working or exercising in such conditions. This condition may indicate the onset of **hyperthermia**.

A stomach upset with diarrhoea may aggravate heat exhaustion and/or vomiting because salts and fluid is lost.

Signs and symptoms

1. Victim may feel exhausted but restless.
2. Victim may have a headache and feel tired, dizzy and sick.
3. Muscle cramp in the legs and stomach (caused by salt deficiency).
4. Victims face will be pale and the skin cold and clammy.
5. Breathing becomes fast and shallow.
6. Pulse is rapid and weak.
7. Temperature may be normal or low.
8. Victim may faint on moving suddenly.

Aim of treatment

To prevent the victim from worsening, to move to a cooler place and replace lost fluids and minerals. Get medical help.

Treatment

1. Lay victim down in a cool place.
2. If victim is sweating heavily, has cramps, diarrhoea and/or is vomiting, give saline drink. If the victim becomes unconscious, place them in the recovery position.
3. Seek medical aid.

Heat-stroke

Heat stroke occurs when the body can no longer control its temperature by sweating. Overheating because of very hot environment can occur quite suddenly. Heat-stroke victims must always receive medical attention.

Signs and symptoms

1. Victim complains of headache, dizziness and feeling hot.
2. Victim becomes restless.
3. Victim may become deeply unconscious quickly.
4. Victim will be hot and have a temperature.
5. Victim will look flushed.
6. Skin is dry (not sweaty).
7. Pulse is full and bounding.

Aim of treatment

To reduced the temperatures as quickly as possible and get medical help.

Treatment

1. Lay the victim down in a cool place and remove clothing.
2. If the victim is conscious, place them in a half-sitting position.
3. If the victim is unconscious, place them in the recovery position.
4. Wrap victim in cold wet sheet and keep wet.
5. Cool by fanning.
6. If the victim is conscious give cool drinks.
7. Remove to hospital or doctor.
8. Once victim cools, cover with dry sheet and move to an air-conditioned room.

Definition:

Hypothermia is the condition produced when heat is lost from the body core.

A person is in a state of hypothermia when their deep body temperature is lowered. This deep body or core temperature can only be measured using a special instrument but for us, as canoeists, the signs and symptoms of a hypothermic person are quite clear enough to allow us to recognise the condition as soon as we see it. It is this recognition of hypothermia in its early stages, which is the key to successful first aid action. It gives us the chance to arrest the deterioration of a person's level of hypothermia to its potentially deadly conclusion.

Hypothermia occurs when the body core temperature falls below 35 °C (i.e. a fall of 2 °C.) The body core is the internal body organs, particularly the heart, lungs, and brain. The peripheries are the appendages, skin and muscle tissue. Moderate hypothermia can be reversed and victims usually recover completely. If the body core temperature falls below 26 °C then recovery is unlikely and death is probable.

Hypothermia can occur when the environment is very cold and is often caused by immersion in cold water, inadequate protection against cold weather or long exposure to the cold.

The ability of the body to resist cold depends on age, physique, health and fitness. Alcohol, some drugs and illness will reduce the resistance to hypothermia.

What happens to the body when it cools?

When a person becomes cold his body puts into action automatically a sequence of functions, which are aimed at conserving and generating heat. One of the first of this results in the familiar white face. The skin becomes pale because the circulation of blood to the body's surface has been reduced drastically. This lessens the natural radiator effect of warm blood near the skin, losing heat to surrounding air and wet clothing. A person in this state of cooling is definitely not in danger of dying of hypothermia. Their condition is very mild and merely exercising or

putting on more clothing will probably improve things dramatically. Failure to do anything about it will result in further cooling and the body puts into action its next survival reflex: shivering. This reflex is designed to give us exercise whether we want it or not. The rapid contraction of surface muscles all over the body is clearly visible and results in heat being produced. Shivering is a unique form of exercise since we can do it while sitting or standing still, so it is possible to sleep and shiver, for example. It can increase the body's heat production by three or four times and can be maintained for long periods but the price paid in energy expenditure is high.

If a person should continue to cool beyond this stage, their condition becomes very serious and the first aid treatment gets increasingly difficult to make effective. Firstly, the shivering stops and is replaced by rigidity in the muscles making the person look very stiff-limb in their movements. The ability to balance and co-ordinate movement is gradually lost and speech becomes increasingly incoherent. At this stage a paddler, no matter how strong and fit, is in grave danger. As the condition worsens, consciousness decreases until eventually there is total heart failure.

How does hypothermia happen to canoeists?

The ways in which a paddler can become hypothermic fall into three areas:

- Immersion in cold water
- Cooling by exhaustion
- Combination of these two.

On capsizing and becoming a swimmer, if the water temperature is lower than your body temperature (and it usually is), you will lose heat and, if you are not wearing protective clothing, you will lose it very rapidly indeed. Our bodies lose heat to water 26 times faster than to air at the same temperature.

River and white water paddlers often work in water much cooler than this and are arguably more likely to take a swim than canoeists on the sea. They must therefore be careful to use canoeing clothing, which will effectively reduce heat loss to the water on immersion.

The hard, physical work of kayaking combined with the need for keeping our bodies warm in the cold weather in which we frequently paddle places high demands on our body's energy stores. None of us has an unlimited supply of energy and so it is possible to use it up beyond the limit of the body's resources. The result is exhaustion. This can be caused by all kinds of circumstances such as: too long on the water, insufficient rest or not fuelling the body with food. The fact that paddlers are in wet clothing for most of their canoeing time and losing heat constantly because of this, you can see how easily an exhausted paddlers can rapidly reach a point where he can no longer produce enough energy to maintain his normal body temperature. From this point onwards he is a victim of hypothermia and only quick, effective action on his part, or on the part of his friends, will save him from sinking deeper into its grip.

How do we treat paddler who has become hypothermia?

Treating hypothermia requires you to have an understanding of the condition itself and is based on the simple principle of preventing further heat loss by whatever means possible.

The first thing to remember is that the two methods of cooling (immersion and exhaustion) happens at different rates. In immersion, the canoeist is cooled rapidly and in the case of exhaustion the heat leaks away slowly. It is important to know which of these applies when you are dealing with a hypothermia victim and deciding on your course of action. For a number of medical reasons a person whose core temperature has dropped gradually over a period of time, say during a whole day's paddle, must be re-warmed slowly and treated so that no further body heat is lost. This means using additional dry insulating clothing, sleeping bags, etc, to lag his body and preserve the little heat, which he is slowly and naturally generating. Shelter must be provided, preferably in an atmosphere, which is warm. The casualty may be given fluids to drink, since hypothermia causes body fluid levels to drop, but very cold drinks should be avoided for obvious reasons. Very hot drinks offer no advantages and can cause scalds. When wrapped in as much insulation as you can get and at rest, the casualty will re-warm himself from the core outwards.

When a person's core temperature drops to below 32°C they are in a state profound hypothermia. This is an advanced stage and the casualty is usually semi-conscious or comatose. It might still be possible to save them at this stage by applying the principles of preventing further heat loss but it is absolutely essential to cause the minimum of disturbance to their state of rest. The reason for this is that the heart is in a delicate balance at this point and a dangerous rhythm (ventricular fibrillation) can be triggered off by the slightest stress, resulting in heart failure. You should do your best to insulate and then see that their airway is kept clear. The urgency to hospitalise the casualty should not override the priority for minimum of disturbance, and evacuation should be carried out with great care.

If a paddler has become mildly hypothermic through short-term immersion alone and he is conscious and shivering, in other words rapidly cooled and not profoundly hypothermic, then he can be re-warmed quickly in a hot bath. The bath temperature should be hand-hot and the casualty immersed totally to the neck. There is no need to remove canoeing clothing but the water should be reheated and stirred to maintain its temperature. The speed of recovery from this treatment is usually remarkably quick but it would be wise not to paddle for the rest of the day.

It is important to note that hypothermia can occur in a number of ways and have many causes. In addition to the cold water mentioned above, there are other causes of hypothermia such as the following:

- Failure to eat and drink enough after exercise.
- Failure to wear enough clothing.
- Failure to cover the head and neck well.
- Failure to cover the body well.
- Failure to cover the feet well.
- Failure to cover the hands well.
- Failure to cover the face well.
- Failure to cover the ears well.
- Failure to cover the nose well.
- Failure to cover the mouth well.
- Failure to cover the genitalia well.
- Failure to cover the feet well.
- Failure to cover the hands well.
- Failure to cover the face well.
- Failure to cover the ears well.
- Failure to cover the nose well.
- Failure to cover the mouth well.
- Failure to cover the genitalia well.

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- Failure to cover the ears well.
- Failure to cover the nose well.
- Failure to cover the mouth well.
- Failure to cover the genitalia well.

It is important to note that the following are not causes of hypothermia:

- Failure to cover the head and neck well.
- Failure to cover the body well.
- Failure to cover the feet well.
- Failure to cover the hands well.
- Failure to cover the face well.
- Failure to cover the ears well.
- Failure to cover the nose well.
- Failure to cover the mouth well.
- Failure to cover the genitalia well.

FOUR ELEMENTS OF THE ESKIMO ROLL

A Step by Step Guide

There are many ways to roll a kayak upright safely and efficiently, just as there are many effective ways of doing a brace stroke. Any Eskimo roll is usefully categorized, like the brace strokes, by how the paddle is used to obtain purchase on the water. There are sweep rolls, brace rolls, and rolls that use no paddle at all, hands rolls. Because all roll techniques are subject to the same forces affecting boat rotation, it is not surprising that these different rolls have more similarities than differences. This article is about those elements of the Eskimo roll common to all approaches: the setup, the sweep, and the hip-snap/recovery. Each is discussed separately although they are often performed as one continuous motion.

The Setup

The setup position for a roll is a tight forward leaning posture with your paddle against one of the kayak's rails and your face near that same side of the front deck. This low profile makes it less likely that you'll catch a rock as the current drives you and your boat downstream. Your helmet protects the back of your head, your flotation jacket protects your back, and the entire kayak shields your face.

I suggest that you quickly tuck forward into the setup position when you realize you are about to tip over, even before your head gets wet. Besides the obvious safety considerations, a rapid forward lean creates momentum that will help carry you and your flotation jacket all the way under the boat. Your momentum and the buoyancy of your flotation jacket help to move your paddle toward the surface into a position from which you can begin the Eskimo roll. When a flip in turbulent water sends you tumbling, it's difficult to know which way is up, and a quick setup will help you become oriented more quickly to the surface again.

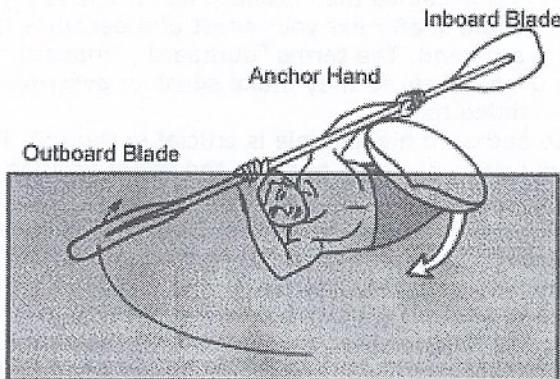
An Eskimo roll can be performed in a right- or left-handed manner, defined by the hand you use to sweep your blade away from the boat (the hand nearest the bow when in the usual setup position). I've used right-handed rolls in the illustrations, unless stated otherwise. In a right-handed roll, you set up by leaning forward toward the left deck and placing your paddle on the left side of the

boat. The right hand (the hand nearest the bow) sweeps away from the boat and becomes the outboard hand. The left hand stabilizes the paddle shaft near your chest and becomes the anchor, or inboard hand. The terms "outboard", "inboard," and "anchor" are useful because they make sense in describing either right- or left-handed rolls.

Control of the outboard blade angle is crucial to the roll. This blade should always have a climbing angle in the setup position so that as the blade sweeps away from the kayak it planes toward the surface. Most kayakers use a right-hand-control paddle, which means the paddle blades are offset 70 to 90 degrees, and you control blade angle with the right hand. This paddle is shown in all illustrations, and always requires a strongly flexed right wrist when setting up for any right-handed roll. If you grip the paddle shaft too loosely, the climbing blade angle may be lost, and you risk having the blade dive sharply under water during the sweep, which is disastrous for your roll. *Grip the paddle firmly with your right hand.*

An experienced whitewater paddler often sets up so fast that the kayak flips over and is rolled upright in one fluid motion; the momentum gained during the flip is used to help right the boat. However, I recommend a slow, methodical setup when learning to roll so that you can feel and accurately connect each independent movement. This is no place to take shortcuts; believe me, some patience here will pay off in the long run! First, become oriented to your boat when upside down by placing both wrists or forearms in contact with the side of the kayak. When at least one of your hands feels air or the paddle can be felt to move freely, you know the paddle is on and parallel to the water's surface. Like a good tennis or golf stance and back swing, a good setup allows you to execute a technically good roll from the same position every time, with predictably good results.

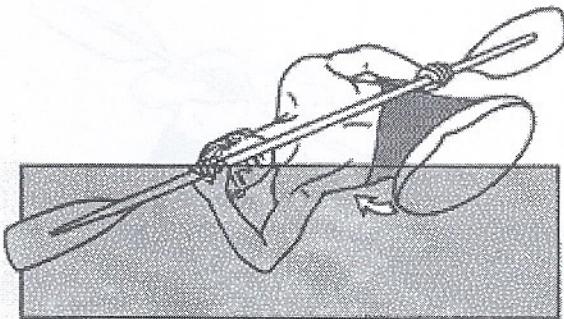
The Sweep



The sweep phase of the roll is so named because the paddle, initially in a position parallel to and next to the boat, is swept away from the boat's side to gain purchase on the water. The manner in which the sweep is performed generally distinguishes one Eskimo roll from another, but in every case, the paddle blade should be held on or near the water's surface as the paddle is moved fully away from the boat. While the outboard paddle blade moves away from the boat, across the surface, the inboard paddle blade (and sometimes the inboard hand and elbow) moves over the kayak's hull, as shown to the right.

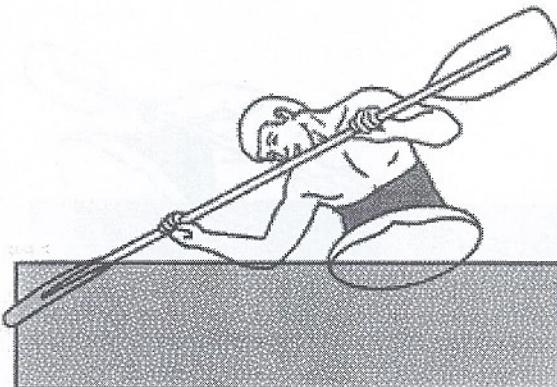
The sweep part of the roll sets the stage for rotating the kayak upright not only because the outboard blade moves to the surface at this time, but because your head and trunk move to the surface, also. The closer your head is to the surface throughout the sweep, the more nearly upright your kayak will be after the hip-snap. This is why leaning and reaching to the surface during the sweep is such an important part of performing a quick and effortless roll.

Hip-snap (or Hip Rotation)



The hip-snap is almost a 180 degree shift in the position of the kayak's edges, accomplished by a complete reversal in the direction of lean. For instance, for a right-handed roll your torso leans all the way to the left at the beginning of the hip-snap and all the way to the right at the end, as shown to the right. Notice that the position of the paddle and upper body does not change greatly. Boat rotation is driven by the movement in the lower torso. In the brace roll (similar to the high brace) the motion is abrupt, so that the paddle does not have enough time to displace water and sink. In the sweep roll, however, the hip-snap is diffused over most of the sweep stroke. The result is the same, but the motion is smoother, less forced than the word "snap" might imply.

The Recovery



Gravity must be overcome in order to raise your body and then your head from where they are floating in the water to where they are supported by the boat. To minimize the effect of gravity during the hip-snap (and decrease downward pressure on the paddle), allow your head and shoulders to stay in the water, supported by it, until the hip-snap is nearly complete. At that point the kayak is rapidly being pulled underneath you, and continuing boat rotation with steady knee pressure effortlessly rights the boat; the effect is like coasting upright. Moving your head the last few inches upward is coupled with the last few degrees of boat rotation, no separate, distinct movement of the paddle should be needed (see position to right). The rotating kayak will literally force your body out of the water as it rotates underneath. That is the beauty of a good roll: if your face is the last part of your body to come out of the water, then the recovery, as a separate part of the roll, usually doesn't exist. The roll is complete and you are sitting upright over the boat at the completion of the hip-snap, ready to take a paddle stroke on either side of the boat.

Summary: Basic Principles of all Eskimo Rolls

1. Start each roll from the setup position.
2. Reach upward with your outboard hand during the sweep, and maintain a climbing blade angle to help keep your paddle near the surface.
3. Lean upward and move your head and trunk as close to the surface as possible as you sweep the outboard blade in a full arc away from the boat's side.
4. Begin the hip-snap after good purchase is obtained. Hip-snap (rotate) the kayak by pulling your knee up to the relatively stationary platform of your paddle, as opposed to pushing down on the paddle to raise your head prematurely.
5. Use head tilt and body lean to keep your head and torso in the water and supported by it until the kayak rotates underneath you, forcing you up and over the boat.
6. The "recovery" following the hip-snap results from doing the hip-snap and lean correctly. It is not a separate action of a well perform roll.

TOWING

Towing is a form of rescue and as with any rescue you need to evaluate the situation and come up with the best plan of action. You must consider the following: Is the person in danger? What are the conditions? What type of towing equipment do you have in the group? How many people do you have to help? What distance do you need to cover? Can the victim keep their kayak upright on their own? **Note: The last question is critical!** It is another reason for always paddling in a group of three or more. If it is only you and the victim, how can the person who is sick or hurt keep the kayak upright without assistance? Who is going to tow? You are in a very bad situation and will need to signal for help. When with a group do not forget about the rest of the group when towing one person.

The most common reason for towing is fatigue on the part of a paddler. The conditions may turn windy and paddler begins to lose energy. Another reason could be a paddler having trouble staying on course in windy conditions. In this instance, towing will help the paddler keep his/her bow pointed in the right direction. Both of these are easy tows because the person being towed is still paddling and the tower is only assisting. The next most common reason for towing is illness (motion sickness or physical injury). Other reasons for towing include: damaged equipment, lost paddle, or capsized at an inopportune time and/or place.

Towing Equipment

In order to tow, you will need to be equipped. The basic equipment is a towline and a knife. The four basic systems are tow belt, over the shoulder tow bag, PFD with tow harness and boat attached tow system. Each system has its advantages and disadvantages.

The tow belt is the most popular system. Many companies offer variations of the system. What they have in common is a quick release belt, 30-50 feet of line with a carabiner at one or both ends. The danger of this system is the belt can get turned around so

the quick release is out of reach or that the quick release get buried under your clothing or PFD. For this reason, it is good for both ends of the line to have a carabiner and to have a knife attached to your PFD. The disadvantage of the tow belt is you are towing from a low point and the line has a tendency to get caught on equipment on the stern deck and/or the stern itself. The bag and line opening should be large enough so it is easy to repack the towline quickly.

It is becoming more common to see PFDs with tow harnesses built in. These were first designed primarily for river paddlers and river paddlers only need a short towline. The advantage of the PFD towline is you always have it and the quick release is in front of you. In addition, many of them tow from a higher point on your back, which helps to keep it from getting caught on equipment, rudder or the stem of the boat. Kokatat and Lotus has PFDs with tow systems designed for both river and sea kayaking. Most of these are Coast Guard approved as Type 5, which is for special use.

Remember towing can be dangerous. You need to practice in varying conditions. You must be comfortable with capsizing and release your tow system while underwater. If you tow, you need to have a knife available to cut the line in case of entanglement.

Deck mounted tow systems are very popular with British paddlers and are gaining in popularity. It uses a quick release cam cleat, fair lead, and a bag with the towline and carabiner. This system puts the least stress on the paddlers and may be the safest because the towline is not attached to the paddlers. Its disadvantages are; it stays with the boat, so if you switch boats you do not have it, it rides low so it gets caught easily, and it is hard to repack on the water. Deck mounted systems have longer lines (55 feet) than other systems. Some manufacturers offer this system factory installed as an option.

If the kayak to be towed has deck lines then attach the towline to the deck line, otherwise you need to attach it to the carrying toggle. Deck lines are usually stronger and in better conditions than toggle lines.

Tows can be broken down into short or long tows. A short tow is usually only a few hundred feet. It is used to move the person out of danger or back to their lost paddle. It needs to be quick and efficient. Long tows are the most common. The distance can be a few hundred feet to a few miles.

Short Tows

There are two short tow categories. One uses a short towline, which is just long enough so the bow of the boat being towed does not hit the stern of the towed boat. The other type of short tow is called contact tows and does not use any equipment. These tows are used to get a person out of a bad location quickly. An example would be a capsized kayak in the channel. You need to move that kayak a couple of hundred feet quickly. The short tow is the answer.

Everyone should practice and know how to do contact tows. Unless the two paddlers have practised contact tow, it will be a hard tow to pull off. The key is to keep the bow of the boat being towed as close to the towing boat as possible.

Some of our guides are installing a very short towline on their kayaks. This is used to pick up a lost paddle or boat. This line is only a couple of feet long with a small snap link (mini carabiner type buckle). This line is attached to your boat. How many times have you seen a person capsized and let go of their boat and/or paddle? The short towline solves the problem of retrieval of lost equipment. It can also be used in a contact tow to help keep the bows together. It runs through the deck line or toggle and clips back onto its own kayak.

The two types of contact tows are bow to bow, which has the bows of both boats in the same direction and bow to stern, which has the bows opposite directions (Fig 1, 2, & 3).

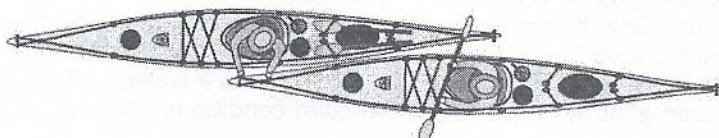


Fig 1 Bow to bow contact tow

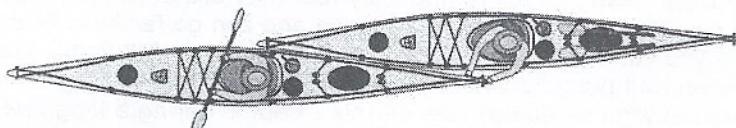


Fig 2 Bow to bow short tow

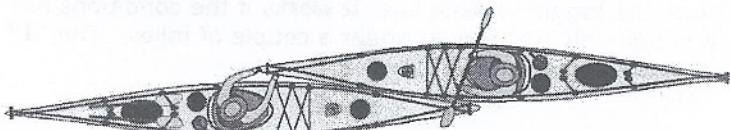


Fig 3 Bow to stern short tow

Keep the two boats together. The person being tow should edge their boat over to the other boat to help keep the boats together. The drawings show the two boats upright, but the boat being tow should be edging. This is an easy tow to learn, but it needs to be practice. If the two boats separate, the movement of the water will pull the boat further apart and you will have to stop and re-set-up. We find that different boat combinations work better with the different contact tows. Experiment with different combinations to see what works best.

Long Tows

Long tows are hard work, but a great workout. It is very important that the towline is the right length. The length will vary from twenty feet in calm conditions, forty feet in moderate conditions and 50 plus feet in very rough conditions. It is easy to shorten a line, but much more difficult to lengthen it. The reason for such a long line is that in rough conditions you do not want the towed boat to surf into you as it comes down a wave. A long line does add a lot of resistance, so in calm conditions you may want to shorten it.

The key to the long tow is paddling efficiency. You need to get into a groove. Many paddlers find they feel they are at their limit, but get over the hump and onto a groove and can go farther. Find a pace you can maintain for many hours. Use your full body. Good rotation and pushing with your feet on the foot pegs (as you should always be doing) is even more critical during a long tow.

"I" Tow

The standard "I" tow (Fig 4) is the most used tow. Clip your towline to the toggle or deck line. It works if the conditions are easy and you only need to go under a couple of miles. The "I" tow has the least amount of problems.



Fig 4 Standard "I" Tow

Double "I" Tow

If you have to tow for a longer distance or in harder conditions then get into a double "I" tow (Fig 5) or a "Y" tow (Fig 10-11). The double "I" tow usually works better than the "Y" tow. We have seen the bow of the boat being towed pull from side to side with the "Y" tow. When using a double "I" tow the stronger ***Fig 7***

paddler should be in the front, if you have the option. A problem with the double is that the middle boat is committed for the full tow.



Fig 5 Double "I" Tow

"Y" Tow

The advantage of the "Y" tow (Fig 6) is that different paddlers can switch off to take turns. Just clip on and tow for a while then unclip after another person clips on. The key to making the switch over is being ready and quick. Open the tow bag and have the carabiners in your hand as you paddle up to the boat. A problem with this tow is it is much harder to go around turns as the outer kayak has a longer distance to paddle. The kayak on the inside of the turn must know to slow down and let the outside paddle keep up.

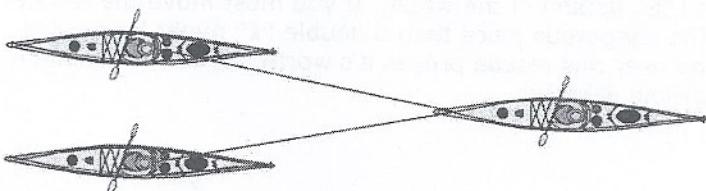
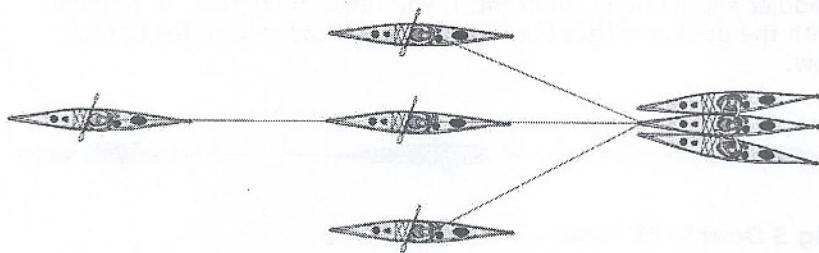


Fig 6 "Y" Tow

The "W" Tow

The "W" tow (Fig 7) is always included in information about towing, but we have never seen it work well. Too many boats and towlines are involved. All paddlers must paddle at the same speed and in a tight formation. The drawing looks good, but in practise it does not work.



"W" Tow

Drift Stopping Tow

The drift stopping tow (Fig 8) like all tows will get you out of trouble. If a person capsizes and is being pushed into a dangerous area (i.e.. bulkhead, cliff, boat channel etc.) a short tow line is hooked up to the stern of the rescuer's kayak and the tower paddles in place or slowly forwards as the rescuer performs the rescue. The person towing usually cannot make much forward progress since they are pulling the rescuer's boat, the capsized boat and the person in the water. If you must move the rescuer out of the dangerous place then a double "I" might be needed. Over and over this rescue proves it's worth. In easier condition, a short towline is better.

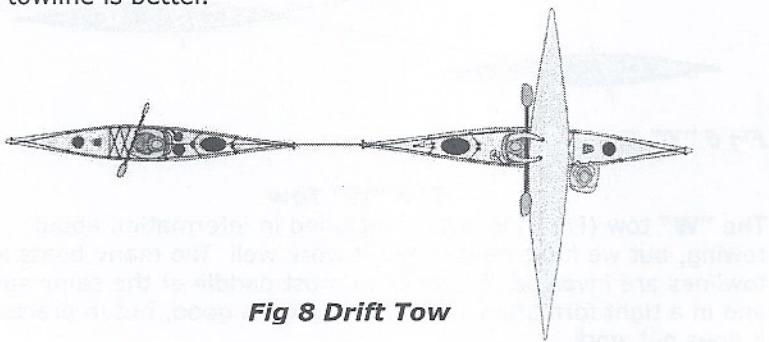


Fig 8 Drift Tow

Stabilising a Victim

For tows with a stabiliser (Fig 9) always clip onto the person Before

needing the tow and not the person stabilising. It is hard work stabilising and they will want to switch off once in a while. If you are hook up to them, they must stay with the tow until it is finished. The key to being the stabiliser is to edge your kayak and keep the bows as close together as possible. Stabilising a victim is harder then it looks.

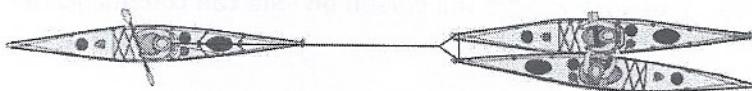


Fig 9 stabilising a victim during towing

Tow Landings

Landing a person in rough conditions is difficult and could be dangerous to both the person being rescue and the rescuers. Landing a person in over three feet surf is impractical. It is almost always possible to find a location with smaller surf. If you must land in very large conditions, it might be safer to have the person leave their boat and swim in. If this is impossible, set up a drogue. A drogue is a type of sea anchor, which slows the movement of a boat. Since very few paddlers carry a real drogue, the next best solution is to hook up a towline to the stern of the boat being tow. The person in this rear boat would help to slow down the towed boat and help keep it straight. When the towed boat starts to surf, the rear boat would paddle backwards trying to slow the movement of the towed boat. The rear person needs to be a very skilled paddler. You would not want to capsize while the towed boat is surfing in. The towline needs to be as long as possible so the anchor boat does not surf a wave at the same time as the boat being tow. A great amount of force is put on the people and all the equipment. It is sometime better to drop the tow just before entering the surf zone and have the person being tow handle the wave as best possible.

Before landing, you would make a plan assigning jobs to different paddlers. One person would go ahead of the group and scout the landing zone for a safe location. This person will land and signal the rest of the group to slow down or paddle hard. As the group lands, this person would grab the boat being towed and pull it up onto the beach. If this was a long tow and the group is large, you might send a few paddlers ahead to land. Once they land, they could go for outside assistance or set up a first aid or bivouac station. If you have radio the person on land can communicate with the people towing.

Final Thoughts

Remember towing is potentially dangerous. You should practice capsizing and releasing towlines and practice tow in different conditions. The more boats involved in the tow the more things that can go wrong. Again, never put the group in danger to save one person. A good leader should never allow the situation to develop into a dangerous one. If leading a group, try to have another person or people do the towing. If you have to tow, you cannot lead the group. When all else fails and the situation is too difficult or dangerous, it is time to use signalling equipment and get outside help.



Be A TITAN