

## INTRODUCTION

Rolling is an important skill for kayak paddlers. Without it many of the benefits of being sealed into the boat by a spray cover are lost. For the advanced sea, surf or white water paddler, an awkward, tiring or dangerous swim may be prevented, and in the competitive disciplines much time may be saved by an efficient and reliable roll. Intermediate paddlers can learn and practise off-balance manoeuvres more confidently if they know that a roll will recover them from their errors and beginners will develop good water confidence and three-dimensional thinking if they learn to roll early.

Rolling is normally learnt in a swimming pool. Calm, warm water, good visibility and the confidence engendered by a controlled and safe environment all help to make this the preferred situation, but if a pool is not available it is not difficult to learn in open water, although the approach is different. If rolling is learnt in a pool, it must in any case be proved in the real situation before any claim to competence can be made.

This site outlines the history and principles of rolling before going on to explain how to perform and teach various types of kayak roll. The section on principles does not need to be understood before rolling is attempted but some pupils and teachers may find it useful in sorting out problems or refining technique.

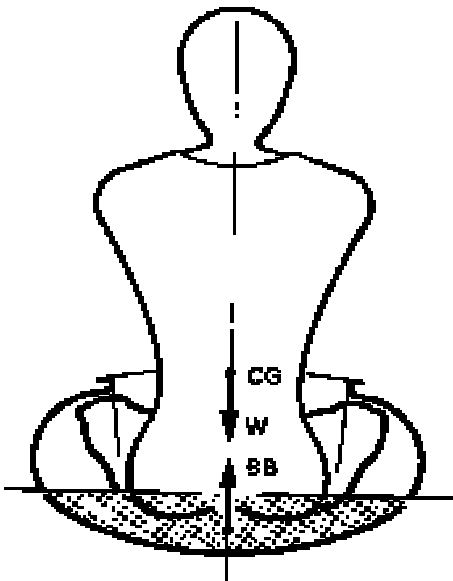
## HISTORY

The Inuit people have been rolling their kayaks for many centuries; for them, the ability to roll was a basic survival technique. A missionary, writing in 1765, described ten methods by which an Inuit righted his craft, including full- and half-paddle rolls, and rolls using the harpoon or just the hands. A significant observation in the account is that once the paddle was positioned, the kayaker applied 'a flick of the hips' to recover.

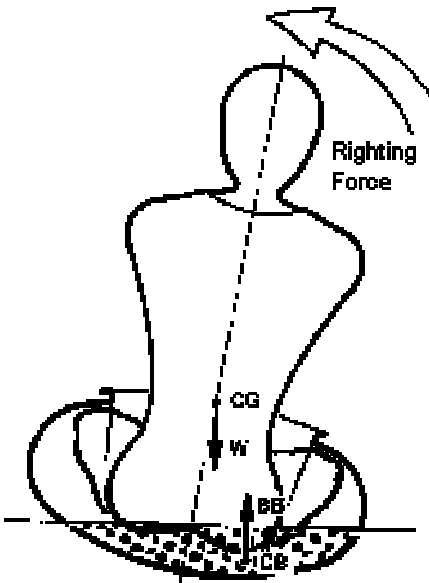
The first non-Inuit known to have learnt to roll was the Austrian, Edi Pawlata, who taught himself in 1927 after reading accounts by the explorers Nansen and Jophansen. An English explorer, Gino Watkins, learnt directly from the Inuit in 1930, but unfortunately he disappeared on a trip to the Arctic soon afterwards. These early European rolls involved levering the body upright from the water with little or no hip flick.

It was not until about 1965 that the hip-flick was re-discovered, and it was this, together with the revolution in boat design and construction caused by the advent of rigid plastic boats, that led to rolling becoming a valid technique for white water paddlers.

# PRINCIPLES

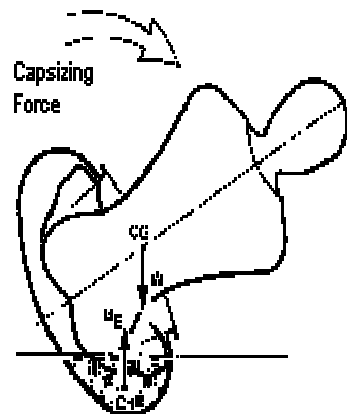


Consider the paddler sitting or kneeling in his boat. The combined weight,  $W$ , acting at the centre of gravity,  $CG$ , pulls the boat down into the water until the buoyancy force,  $BB$ , generated by the submerged part of the boat, increases sufficiently just to balance the weight. The buoyancy force can be assumed to act at a point at the centre of the submerged part called the centre of buoyancy,  $CB$ .

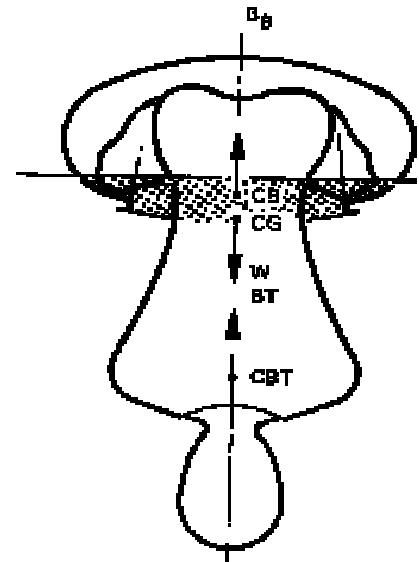


If the boat is tipped to one side the shape of the submerged part of the hull changes and the centre of buoyancy moves as shown. The effect of the two forces, now out of line, is to create a net righting force which attempts to return the boat to the upright position, and so for small angles of tip the boat is stable.

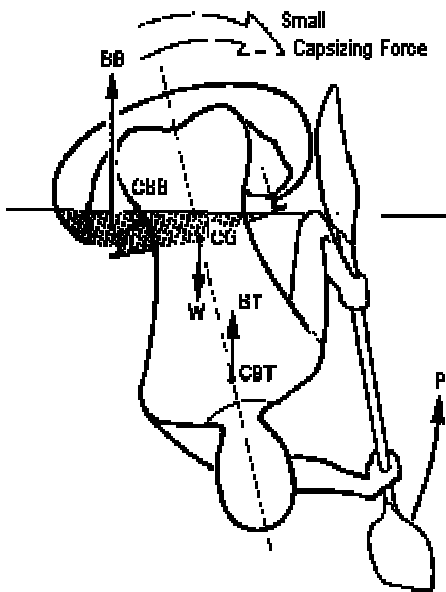
If the angle of tip is increased further, then the movement of the centre of buoyancy is insufficient to compensate for the movement of the centre of gravity and the boat will capsize.



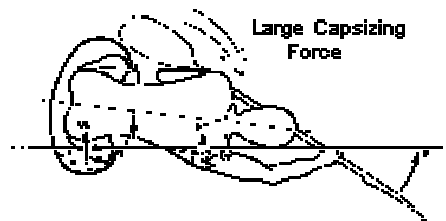
When fully capsized the boat again becomes stable with the centre of buoyancy and the centre of gravity in line. An additional buoyancy force also acts on the torso from the moment it becomes immersed and this is shown as BT.



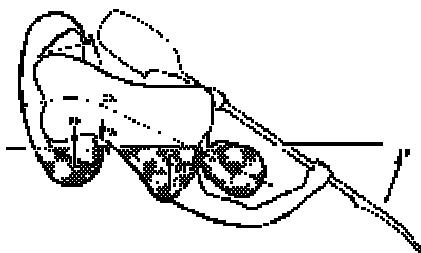
**The Stiff-Body Roll**



So far we have considered the paddler as being rigidly fixed in his boat, with no movement at the waist or hips. The roll starts with the submerged paddler reaching for the surface with the paddle. A force, P, is generated which attempts to lift the body. As the boat begins to roll, the centre of buoyancy moves away from the side nearest the surface and increases the resistance of the boat to being righted. By the time the rigidly held body is clearing the surface the buoyancy force generated by the torso, which has until then been assisting the roll, rapidly decreases to zero. The weight of the body is then too far from the roll axis and unless the paddle stroke is exceptionally strong, the combination of these two effects causes the roll to fail. They must be minimised by improvements in technique - the first by a movement known as the 'hip flick', and the second by bringing the centre of gravity of the upper body much closer to the roll axis.



## The Hip Flick

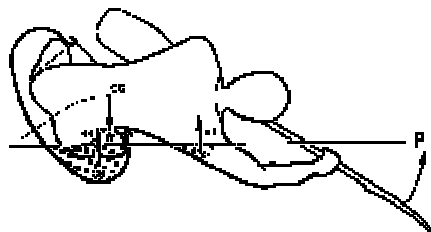


The principal aim of the hip flick is to roll the boat far enough upright that its buoyancy force begins to assist the righting action before the body is lifted out of the water. The body is twisted at the waist, facing up towards the surface and bending forward for Pawlata-type rolls, and towards the bottom, with the back arched, for Steyr types. It is allowed to remain there, supported by the water, while the boat is righted with a rolling action of the hips.

This is the hip flick. One knee pulls the boat towards the body while the opposite hip pushes it away. In the rolls involving a sweep-type stroke, the waist behaves like a universal joint, converting the twisting action of the upper body into a rolling action of the pelvis and boat. The net result is to roll the boat almost upright while the body remains in the water. During this action the body is pushed further under the surface, this tendency is resisted by the buoyancy force that acts on the torso, assisted by the paddle if necessary.

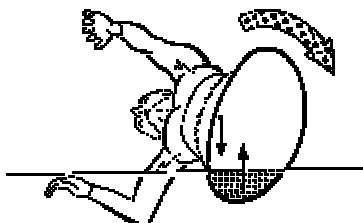
The 'flick' part of the hip flick is a refinement of the basic technique, in which the boat is turned upright with a fast driving action of the lower body. Momentum is thereby gained, so that at the end of the flick the boat pulls the body out of the water and helps to restore it to the upright position.

## Retracting the centre of gravity - the follow through

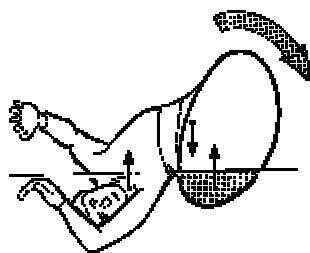


When the boat has been rolled up far enough with the hips so that the action of the boat's buoyancy force changes from resisting the roll to helping it, the centre of gravity must be pulled close to the boat to enable the body to be lifted out of the water.

As it does so, the action of the body must change from resisting the downward force caused by the rolling action of the boat (when the centre of buoyancy of the torso needs to be as far away from boat as possible) to that of reducing the capsizing moment by bringing the centre of gravity towards the roll axis. This can be done in a number of ways: by lying along the back or front decks, or by folding the body over the side of the boat.



If the body lies along the front or rear decks too early then the hip flick is curtailed and the benefit of keeping the buoyancy force acting on the torso is lost.

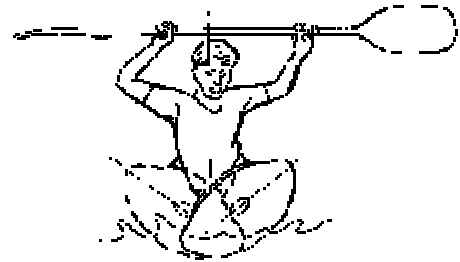


. Here the torso is supported by the water and so it is easier to roll the kayak upright

## TEACHING ROLLING

The hip flick and associated follow through are so vitally important to good rolling that they must be taught and mastered thoroughly at an early stage. Superficial ability is not enough as the stress of concentrating on body position or paddle movement later in the learning process may cause the pupil to forget to carry out the hip flick actions. As a result, he lifts his head out of the water first, loses power and the roll fails.

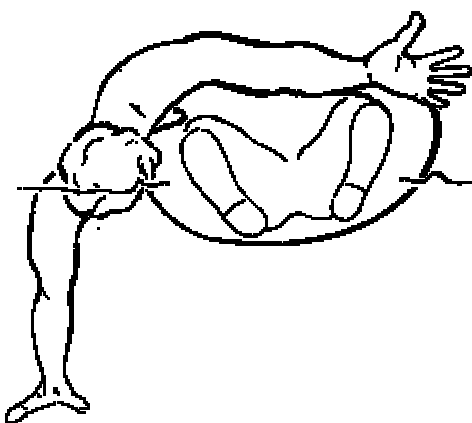
The first exercise is to sit in the kayak and feel that it is held firmly by pushing forwards with the feet on the footrest, upwards and inward with the knees and thighs against suitable fittings, downwards with the backside into the seat and perhaps backwards against the backstrap. Many beginners find it hard to remain locked into even a well fitting boat, so it is important that the equipment is adjusted as well as possible. The paddle is then held horizontally above the head and the boat rocked from side to side by lifting the knee and hip, first on one side and then the other; the body remains vertical throughout



The angle of tip and the speed of movement can be progressively increased until the boat is being tilted as far in each direction as the movement of the waist joint allows. This is a good practice for the "C to C" roll in which the shoulders and upper body remain square to kayak.

Rotation of the upper body can be added to the exercise in preparation for the fully-articulated screw roll. The paddle is held out in front of the paddler, and as the left knee and hip are raised, the torso is rotated to the left, and the right arm extended across the centreline to a position outside the left knee. At the same time the body curves forward at the waist and spine. As the kayak is rocked in the opposite direction the body unwinds, passes through the upright forward facing position, then winds up in the opposite direction, finishing with the left arm extended over the right side of the kayak, and the body bent over to the left. This exercise begins to give the paddler a sense of the timing and sequence of movements in the screw roll.

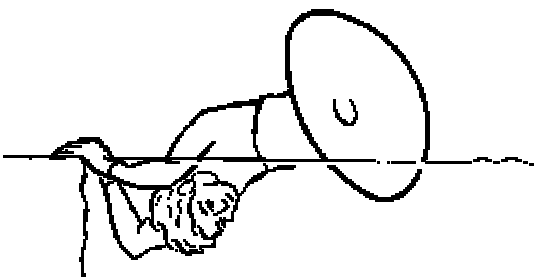
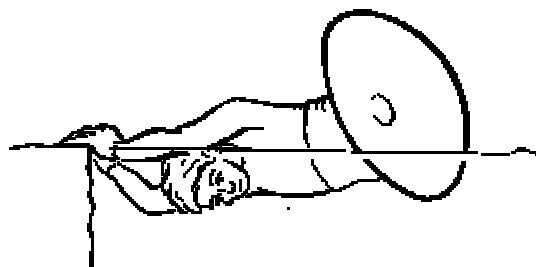
In the next exercise, the purpose is for the paddler to find the best recovery position. For a right-handed paddler, the recovery will normally be on the right side of the kayak.



The aim is to immerse as much of the torso as possible in the water while moving it the shortest distance from the centre line. The angle of roll of the kayak is controlled with the knees and thighs to maximize the righting buoyancy force. To reach this position, begin by lowering the right arm deep in the water. Bend forward at the waist and rotate to the right. The left side of the face should brush over the spraydeck and finish on against the side of the kayak adjacent to the right knee. At the same time the right hand reaches deep into the water pulling the shoulder and upper body under the surface. The hand may help with support by sculling.

Most paddlers will find that, with a little experimentation, they can get their face in the water.

Those who are more advanced and flexible will be able to progress to whole head and second arm immersion. Ultimately, this exercise can be developed into a complete hand roll.

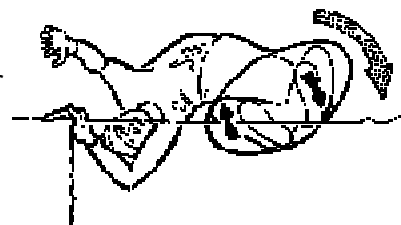


In this next exercise the body lies face-down in a horizontal position with the hands holding palm-down on to the side of the pool, the bow of the instructor's boat, or any other reasonably firm support at water level. To reach this position a right-handed paddler must first rotate at the waist fully to the right, then hold the support and capsize to the right. It is important for the learner to realise that the face and body must be in the water for the exercise to be effective; again the range of movement should be built up until the paddler is stretching the waist in each direction as far as possible, pulling the kayak over with the left knee, then rolling it by pulling the right knee through under the kayak. Initially this should be repeated several times with the body lying passively at the surface- no attempt should be made to bring the body out of the water until the hip flick can be performed almost without thinking.

There is a tendency for the bow of the kayak to drift out from the side of the pool forcing a rear deck recovery. It is important that the paddler keeps the bow close to the side of the pool so that a recovery with the face close to the knee can be practised. Pushing out with the rear hand and pulling in with the front hand will help with this. Once the hip flick can be done consistently with both hands providing support, it should be practised again using only the control hand, since only one hand provides support during the paddle rolls.

### The Body Follow Through

The next stage in developing the complete action is to add to the hip flick (just described) the recovery from the water: as the boat passes through the on-edge position the spine starts to bend forwards from the base; this keeps the head and shoulders in the water, generating buoyancy, until as late as possible in the recovery; the shoulders and face leave the water last, with the face close to the middle of the thigh. This exercise, too, should be repeated a number of times. The diagram shows a recovery in the "C to C" position. Ideally, the paddler's face should be closer to the side of the kayak as it comes out of the water. In order for this to happen, the paddler needs to be bent forward at the waist in a more face-down position than shown here.



If the pupil has difficulty in achieving this flexibility of the spine, then alternative methods of lifting the body from the water can be tried. Many kayak rollers finish by lying along the back deck with no rotation at the waist; this causes less strain to the beginner, but is less effective for two reasons. Firstly, the body clears the water and the torso buoyancy force is lost much earlier in the movement; secondly, the laid back position is a very poor one for resuming paddling on rough water since the paddler is disorientated, looking up at the sky, and is in a weak position to brace with the paddle. If the roll fails when he is in this position then his face is very exposed to rocks and other obstacles. From this position, he has to pull himself upright with the stomach muscles, expending valuable time and energy, before he can do anything else.

## **An Introduction to Kayak Rolling**

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If this is the only method learnt for kayak rolling, then in some boats with high rear decks the body is prevented from leaning very far back, and so finishing the roll is difficult. When paddlers have learnt to roll in a pool, they often find that wearing a buoyancy aid in the laid back position pushes the centre of gravity significantly further out from the boat, and this effect often contributes to difficulties in converting a pool roll into a river roll. One possible way round this for the stiff-waisted paddler is to lean forward. Particularly in large-cockpit boats the face lies close to the front of the spray cover, and the centre of gravity can be brought very close to the axis of rotation. If the boat has a small cockpit, then the head ends up on the raised part of the foredeck and again the centre of gravity is forced further out. The forward position is better than the laid back position because the paddler's face is much better protected and he can sit up into a strong paddling position quickly after rolling.

### **Using The Paddle - The Teaching Rolls**

Only when the pupil has reasonable proficiency in the hip flick and body follow through it is wise to introduce the use of the paddle. Most beginners want to start with the paddle immediately, but its use too soon can lead to the development of bad habits, such as the flick-free or stiff roll, or simply to a discouraging lack of success. Most beginners find it easiest to start by learning either the 'Pawlata' or the 'Put Across' rolls. The former is the most commonly taught (in England), and seems to work very well for the confident paddler; the latter has the benefit of being simpler and of encouraging a better hip flick. Teachers of rolling should experiment with both methods so that they can use whichever suits their pupil best.

### **The Pawlata Roll**

The Pawlata is a good roll to learn initially. It is directly related to the Screw roll which is probably the most useful roll of all, but it is a little easier to perform and more forgiving of failures in hip flick or follow through technique. The aim of teacher and pupil should be to progress to the Screw roll as soon as possible after the Pawlata has been learnt.



The paddler sits upright in the boat, with his back curved slightly forward and his body twisted towards the side on which he wants to capsize. A right-hand-control paddler will normally capsize to the left and vice versa. The control hand is then the forward hand and this holds the centre of the shaft.

In rolling, as in other strokes, it is important that the hand maintains its normal orientation to the blade, and is not allowed to slip around the shaft.

The control of the blade angle during the roll must be carried out by this hand. This may feel strange - if the hand moves past the center of the paddle shaft the ovaling of the shaft is opposite to normal.

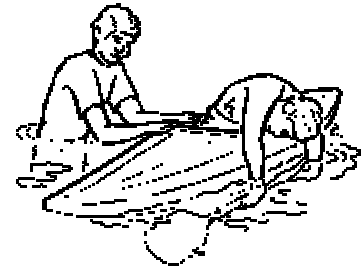
The rear hand holds the centre of the tip of the rear blade as shown, thumb pointing down across the face, and fingers wrapped around the tip. To start the wind-up the control hand rotates the front blade outward through an angle of about 30 degrees.



In this position it lines up with the angle of the front of the deck. The instructor should then stand in the water next to his pupil on the opposite side to the paddle. He supports the boat to allow the pupil to complete the wind-up. In the fully-wound position the pupil is twisted at the waist towards the paddle and bent forward over the side of the boat, with the chin near the middle of the thigh. The paddle is parallel to its initial position with the front blade still held at the same angle, but it is now under water.



The arms are locked tightly against the side of the boat to make sure that the paddle is not carried out of position by the water flow past it during capsize. The paddler should feel the edge of the kayak on the inside of the left elbow and right wrist. The instructor tells the paddler to hold the position when he has capsized, wait until the boat settles, and then sweep the paddle in a wide arc along the surface.

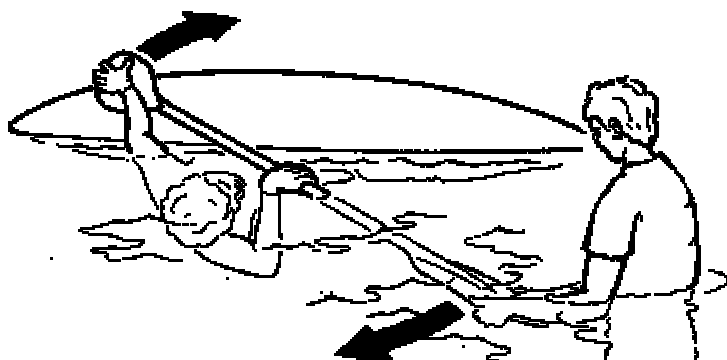


The instructor should support the pupil so that he can achieve a good tight wind-up with the paddle locked in to the side of the boat. It is often helpful for the instructor to counterbalance the kayak while it is in the upright position so that the pupil can practice without fear of capsize. The pupil can then be lowered into the water when he is ready; the instructor reaches under the boat to help hold the paddle in place as it travels through the water, under the boat and back to the surface. He should then move to the bow of the boat, where he is then in a good position to counter one of the most common mistakes, which is for the paddler to pull down instead of sweeping out along the surface. This commonly happens because the back hand is not pushed sufficiently far underneath the pupil's seat during the wind-up, so it is blocked by the gunwhale as it tries to follow through with the body twist.

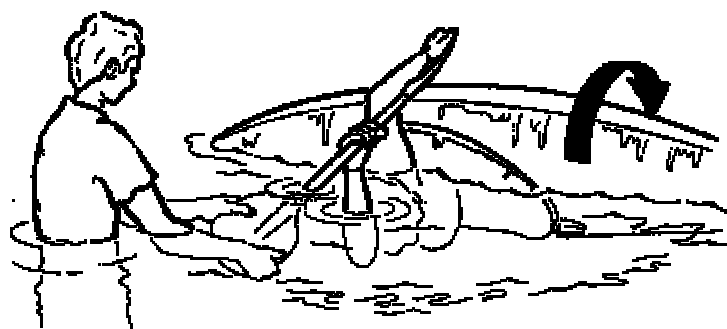


The paddle is not able to continue with its outward sweep, so pulls down instead. The paddler should aim to start the action with the backhand on the centreline underneath the boat. The instructor standing at the bow of the kayak can reset the paddle position or blade angle, walk the paddle round in the correct path. If required the instructor can give the paddle a push in the right direction, or move in and support it to give the paddler something to pull up on. If necessary he can right the boat by placing a hand on each gunwhale and ducking underneath.

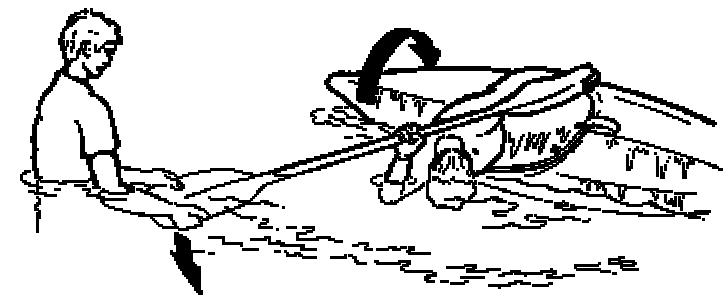




The waist and hips act as a universal joint converting the rotation of the body into a rolling action of the boat, incorporating the hip flick already learned.



The hip flick action in the pawlata has an additional feature to that already practised - during the course of the roll the body must rotate from a face-up position to a face-down position. In doing so the waist and upper body twist in a similar way to the action of a conventional forward sweep stroke.

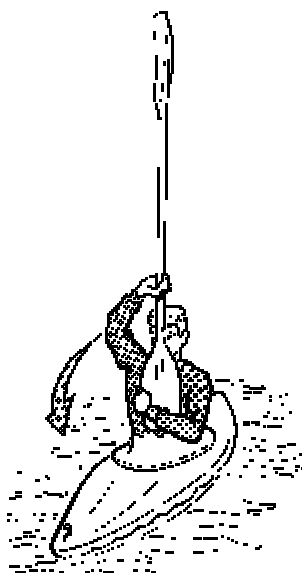


It is this body rotation that also drives the paddle around in a wide sculling sweep along the surface. Some paddlers find that making a conscious effort to stretch as far out along the surface as possible is helpful. Others find a focus on keeping the face in the water as late as possible is a critical factor in success

Once a good Pawlata has been achieved and refined, the pupil should be encouraged to try the screw roll. Provided that the hip flick is effective and that the backhand is pushed clear of the hull to give space for the extended rear paddle, the progression can be effected with little difficulty. In its own right, the Pawlata should still be practised by all paddlers from time to time, as occasions can arise where the paddle must be used from an unusual position or extra power must be generated.

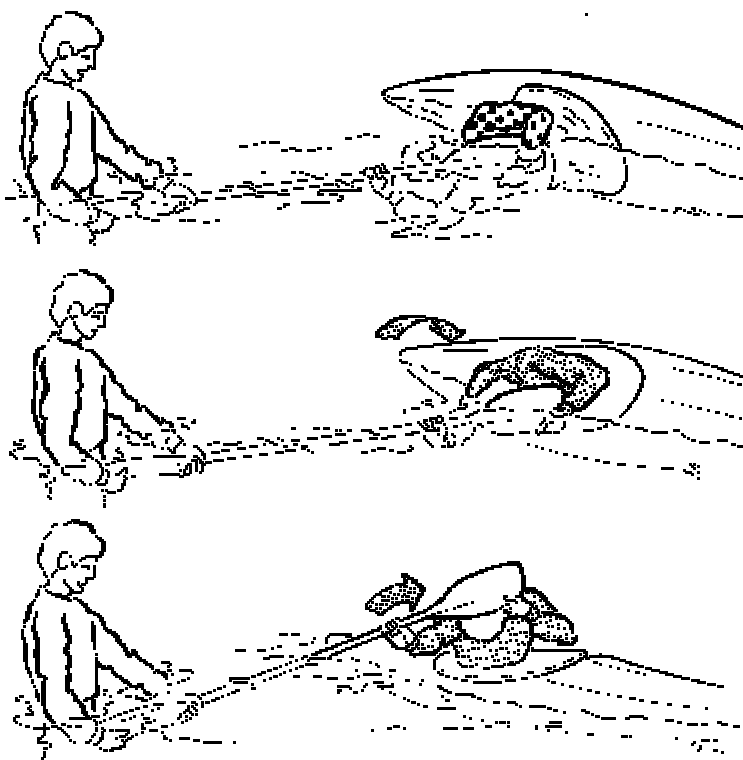
### The Put Across Roll

The second of the principal teaching rolls is the Put Across Roll. It seems to have fallen out of favour in recent years, but it has one major advantage over the Pawlata in that the hip flick action is almost identical to the initial drill. For pupils who have trouble putting all the components of the roll together, particularly those who lose the hip flick while trying to master the paddle action, it offers a valuable intermediate step. In particular, once the eskimo rescue technique has been learnt, the put across offers a method of learning that can be used on open water with a high degree of success. In its own right, it is particularly useful if the paddle has been let go, as it can be performed very quickly after the blade has been regained. It is unusual in that the paddle is not carried down on one side during capsize and brought up on the other, but is left at the surface while the body does all the movement.



One way of introducing the roll after the hip flick drills is via the 'Queen's Salute' position. In this case capsizes should be towards the control side. The top hand is the control hand and holds the paddle just above the lower blade, maintaining the correct register with respect to the upper blade. (This may cause a little confusion at first if the hand grips are ovalled since the hand feels the wrong oval). The lower hand holds the edge of the blade as shown, ready to apply upward pressure. The boat is capsized and the position held until the upper blade touches the water. (If the pupil attempts to cheat by lowering the paddle using the arms the blade cuts into the water end first and sinks). Once the blade is flat on the water the paddler pulls down with the control hand and rolls the boat upright, exactly as he did in early hip flick exercises. The other hand prevents the inner blade sinking. The action is much stronger if both elbows remain in the same vertical plane as the shaft and inner blade.

The roll may also be approached by floating the paddle on the water next to and perpendicular to the centre of the boat with the closer blade vertical. The blade hand can easily reach across the body to hold the paddle, and the other hand can move into position during capsizes. Care should be taken to ensure that the paddle is not pushed under the surface as the pupil capsizes on to it. A common problem with this roll is pulling down with both hands, resulting in the near blade knifing very quickly towards the bottom and giving no support. It is corrected by emphasising the upward pressure with the blade hand. (It is possible to roll from a near blade that is horizontal, using a downwards push with one or both hands, but this is really a variety of hand roll and is much harder).



Once the basic sequence has been mastered, the hands are moved into position later and later in the capsizes, until the pupil can swim a few strokes to the blade, find the position, and then roll up. He can finally complete the roll by capsizing on one side and reaching for the paddle on the other. Many 'real' rolls use elements of the put across, often without the paddler being aware of it. It is, for example, quite common to see a screw roll finished with the downward pull of the put across - this can sometimes leave the paddler in a much stronger position than continuing the sweep to the rear of the boat. The classic "C to C" roll uses a sweeping action similar to the screw roll to move the paddle into position, then a vertical pull like the put across and a hip flick with very little rotation to bring the paddler upright.

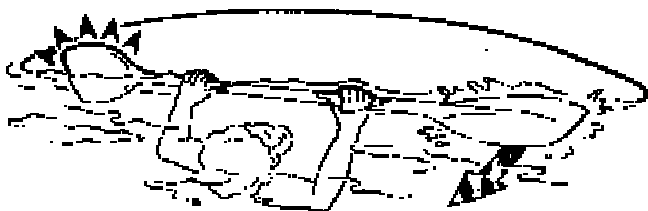
## TYPES OF ROLL

### Screw Roll

The Screw Roll is the most commonly used roll of all because it is reliable, easy to learn and works in most circumstances. Most paddlers use a Screw Roll or some variant of it as their standard survival roll.

The sequence of movements is identical to the Pawlata described above except that hands remain in the normal paddling position on the shaft. Some beginners find it easier to learn the Screw Roll directly rather than pass through the Pawlata sequence. The hip flick must be more effective than for the Pawlata, since less support is available from the shorter paddle lever, and it is even more important that the back hand is pushed clear of the hull to give the back blade space to move.

Like all rolls that are intended for use in difficult situations, it should be learnt on both sides. It is the basis for a whole family of rolls that can all be performed without moving the hands along the shaft.

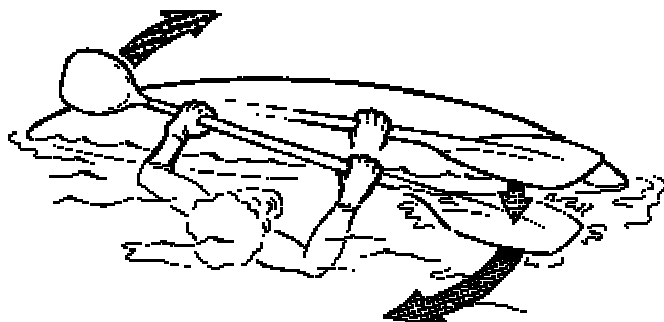


Push the paddle to the surface and bring the head towards the knees so that the forward blade is up at the bow.

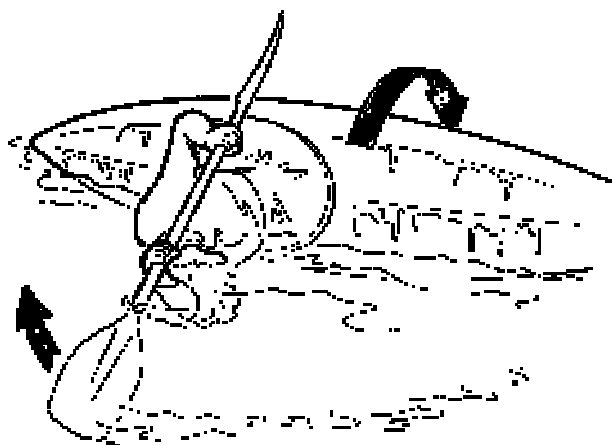
It is important to ensure that the bow blade is above or just on the surface of the water. When learning this can be tested by slapping the blade on the surface while watching from below.

Ideally the bow blade should be set so that the leading edge of the blade is angled upwards to give the blade lift when it travels through the water. This is achieved by arching the wrist the hand holding the bow blade.

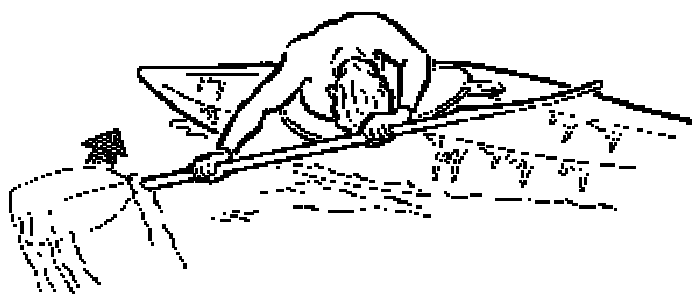
Ensure that the stern blade is free to move towards the bow. If it is too submerged or too high above the surface the roll may fail.



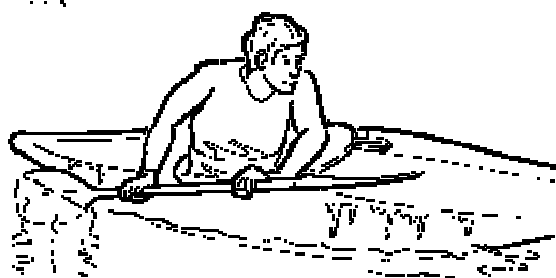
Once the paddle is in position, sweep the bow blade in an arc from bow to stern while using a hip flick to start to right the boat. It is often easier to follow the bow blade with the eyes as it moves through the water.



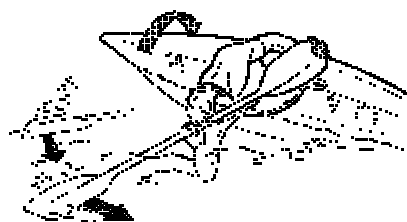
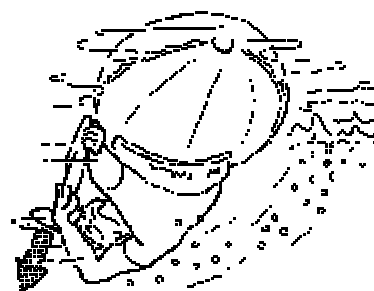
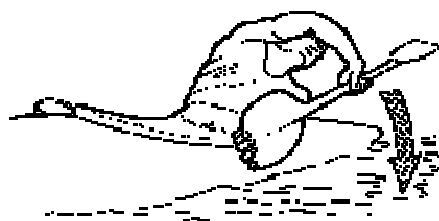
Ideally the angle of the leading edge of the blade will keep it closer to the surface for as long as possible, which will in turn give the paddler more support in the roll. In actual fact, the type of boat and flexibility of the paddler will usually mean that the blade will start to go deeper into the water as travels through the arc towards the stern.



As mentioned before with the Pawlata roll, the paddler may find that making a conscious effort to stretch as far out along the surface as possible to be helpful, while others may find that keeping the face in the water for as long as possible to be the key to success.

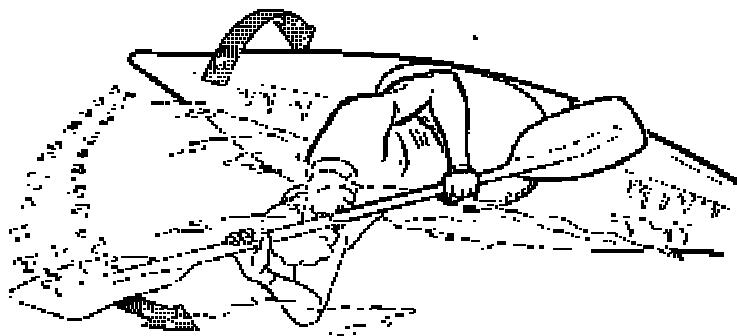


## **Steyr Roll**



The Steyr Roll is a reverse Pawlata. The paddle sweeps across the surface from the rear of the boat to the front and, in order to do this, the wind-up is performed differently. From the Pawlata position the paddle is raised to the vertical; as it continues past the vertical it must be turned outward with the wrists until the position shown above is reached. To capsize, the paddle is pushed down towards the water and the body follows, arched backwards and to the side. The waist and hips act as a universal joint in a similar way to the Pawlata but, in this case, the body rotation is in the opposite direction to that of the boat, because the paddle is carrying out a reverse sculling sweep. The steyr is used as a training roll for the Reverse Screw Roll in the same way that the Pawlata is used for the Screw.

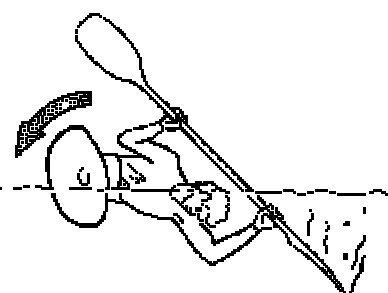
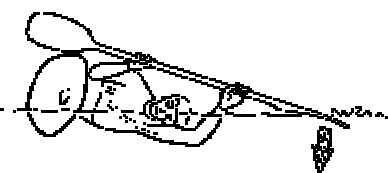
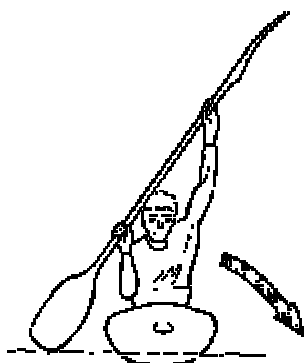
## Reverse Screw Roll



The Reverse Screw Roll is used when for any reason the paddler has capsized and been pushed on to the back deck, or the paddle blade is at the back of the boat; typically this occurs if the boat capsizes over the paddle during a bow stroke. The wind-up position is reached in the same way as the wind-up for the Steyr. The roll can be particularly useful as a follow-on to a Screw Roll which does not quite bring the paddler back into balance: the blade position is quickly reversed and a Reverse Screw follows. More commonly, a Screw Roll backs up a Reverse Screw which fails.

## Vertical Paddle Roll and C to C Roll

A number of rolls are possible using a vertical instead of a horizontal paddle. The hip flick action in this case pulls the boat underneath the body and the paddle provides the resistance. At first it seems impossible for a vertical paddle to provide the necessary support, but the principle becomes clearer if the boat is thought of as rolling around the hips and under the body. A simple draw or sculling draw action can be used. A combination of put across, screw and vertical paddle roll can be used as a good mobility exercise.



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**WARNING:** *The extended arm position shown here is much weaker than one in which the arms stay bent with the paddle parallel and close to the line across the shoulders. Applying excessive force while the arm is extended, especially if the pressure on the arm is also in a rearwards direction has been the cause of many shoulder dislocations among kayakers.*

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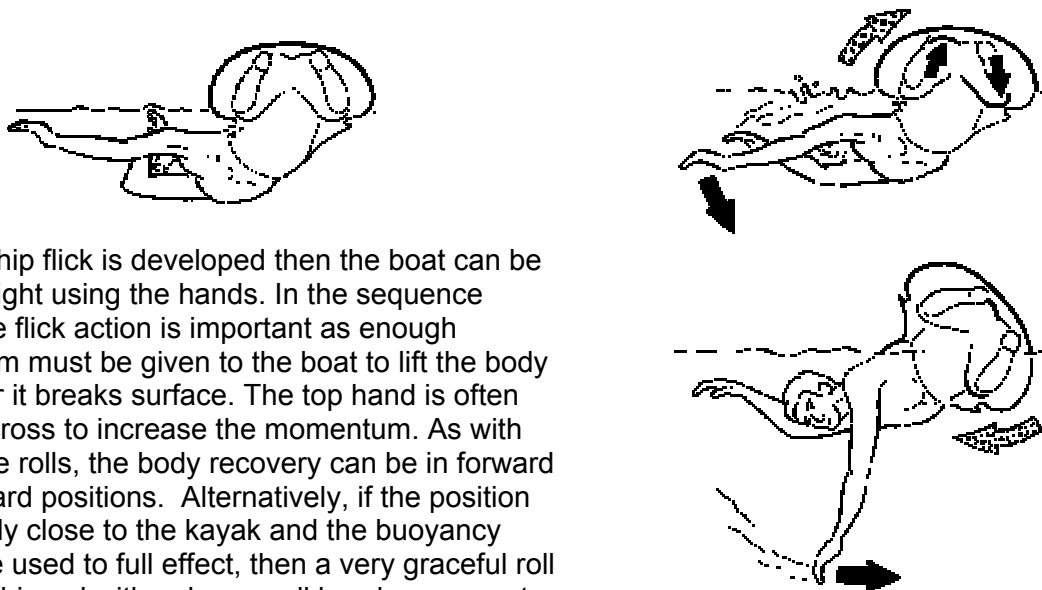
The paddler starts sitting upright in his boat, with his paddle horizontally above his head. For a recovery on the left the left arm is pushed up to full extension and the right arm retracted to the shoulder, until the paddle shaft is almost vertical. The paddler capsizes to the left, holding this position until the blade touches the water. As the blade touches the water a reverse hip flick (pulling the kayak over on top of the paddler) keeps the paddle and upper body near the surface while the boat completes the capsizes. The boat is then hip flicked up while, at the same time, the left arm is pulled in towards the hip and the right arm extended to full stretch. There is very little rotation of the waist in this roll; instead the hip flick is generated by a sideways bend at the waist.

The C to C Roll uses a sweep of the paddle out from the bow of the kayak followed by this same pull down movement. Although the initial action of the paddle makes it appear to be a Screw Roll, it is actually more of a Put Across/Vertical Paddle roll.

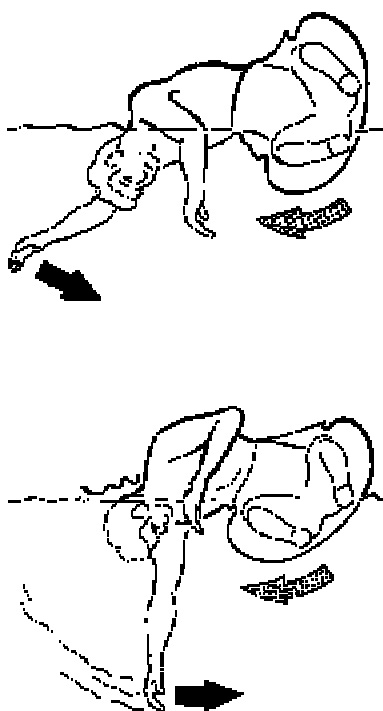
## Storm Roll

The storm roll may be performed as a Pawlata or as a Screw roll. The wind-up positions are the same except that in each case the edge of the forward blade is angled in towards rather than away from the boat. After capsize, the blade is pulled in a vertical arc from bow to stern and becomes a long vertical sculling draw rather than a horizontal sculling sweep. The storm roll is to the vertical paddle roll what the pawlata is to the put across. It is impractical on rivers because of the depth needed for the paddle, but a study of film taken in Greenland shows that it is the preferred roll of the Angmassalik Inuit. The observer can recognise a storm roll by the pronounced lift of the bow as the roll begins.

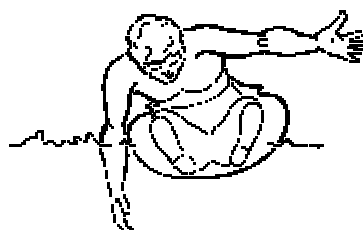
## Hand roll



If a good hip flick is developed then the boat can be rolled upright using the hands. In the sequence shown the flick action is important as enough momentum must be given to the boat to lift the body clear after it breaks surface. The top hand is often thrown across to increase the momentum. As with the paddle rolls, the body recovery can be in forward or backward positions. Alternatively, if the position of the body close to the kayak and the buoyancy forces are used to full effect, then a very graceful roll can be achieved with only a small hand movement.



Many paddlers can perform one-handed rolls, with the other hand held inside the spray cover, and stories are even told of rolls performed without any use of the hands at all. The ability to hand roll can be more than a stunt. In Kayak Polo players often lose their paddles and capsize when shooting for goal, and even on the roughest rivers a hand-roll will sometimes buy enough of a respite to enable the bank to be reached, or a dropped paddle to be regained. Training to hand roll is progressive, with less and less buoyant or resistant objects being used as the support for the hip flick until, finally, the hands alone are needed.



## **Other Rolls**

The experienced roller uses a variety of techniques and combinations of moves to right the boat. The position and feel of his paddle following capsize and his knowledge of the water conditions tell him what he must do in order to bring himself upright. In general he pulls his body to the surface using the waist, knees and hips and then uses the paddle to prevent the body from sinking during the hip flick. This movement enables the body to be brought back over the boat during the follow through. The rolls listed here are merely some of the separately identifiable types that may be used to achieve this.

## **SPECIAL CIRCUMSTANCES**

In certain circumstances the information given in the preceding paragraphs may need to be modified. The possibilities for rolling situations are infinite but a few are readily identifiable.

### **Rolling in Stoppers (Holes) and Breaking Waves**



In stoppers or when 'bongo-sliding' in surf, there is so much turbulence and power in the water that normal techniques are impossible. Instead the body is braced with the paddle in such a position that the drive of the water turns the boat upright, and the body position is then adjusted to ensure stability.

### **Rolling in Shallow Water**

In shallow water, especially if it is relatively slow moving, pushing off the bottom with a vertical paddle can be very effective. A good hip flick is important, and care must be taken to ensure that the shaft is truly vertical before the roll is attempted. Aligning the paddle blade with the water flow will reduce the pressure on the blade, and will sometimes allow for a roll to be completed even in very fast water. In very shallow water it may be impossible to find clearance to do a normal roll and levering against the bottom may be the only option. In shallow, rough water rivers any use of the paddle to roll may be impossible, and a hand roll off the bottom or a passing rock is worth attempting. Aggressively moving into the rollwind-up position will remove the head and face from the most direct impact with rocks, and speed and success will save the paddler from bruises and scrapes as he tries to eject.

### **Re-Entry and Roll**

There may be occasions, particularly when sea paddling, that an attempt at rolling fails and the paddler finds himself in the water alongside his boat but a long way from any safe landing. It may not be possible for his colleagues to come and rescue him, so he is on his own. One option he has is the re-entry and roll. He comes alongside his kayak which has hopefully remained upside-down and is not too full of water, turns himself upside down, gets in and rolls up. Once clear of immediate danger the boat can be emptied by pump or conventional rescue techniques.

### **Stunt rolls**

These rolls are used for entertainment and building water confidence.

#### **Clock roll**

The paddle acts as the hand of a clock. Wind-up is as for a Pawlata roll but turn the wrists outward as for the Steyr. During capsize sweep the paddle over the head to the Steyr start position. Roll up using the steyr. For a clockwise clock the sequence must be performed left-handed. Repeat as often as desired.

#### **Rotary Roll**

The boat capsizes. The paddle remains under water, parallel to the surface. It is extended so that the near blade is held horizontally while the far blade is vertical. An action similar to the sweep stroke will cause the boat to spin round and round on the surface. The paddler rolls up when he runs out of breath.

#### **Top Hat Roll**

This can be performed with any prop, but a top hat is traditional. The paddler must be able to roll one-handed. For a right-handed roll he removes the top hat from his head with his right hand and capsizes to the left. As the boat settles upside-down the still-dry hat is placed on the upturned hull with the right hand. It is retrieved with the left hand as the roll is completed with the right hand and placed, still dry, back on the head.

#### **Cross Bow Roll**

Wind up and capsize is as for a normal screw roll. Under water the paddle is crossed over the bow and swept out in the opposite direction. The paddle finishes under the boat, so it must be released as the roll finishes. Many variations are possible.

## **CONCLUSION**

This list of rolls is not complete, and many other ways can be found of bringing boats upright. It is fun to experiment, and to see what can be achieved. In the end, it is not what the roll is called that matters, but whether it works in difficult situations. Newcomers to rolling should realise that there is a world of difference between a simple screw roll in a swimming pool and a complex recovery stroke performed on the weak side in cold rough water when they are tired and frightened. Only practice in realistic situations can make rolling better and more consistent.