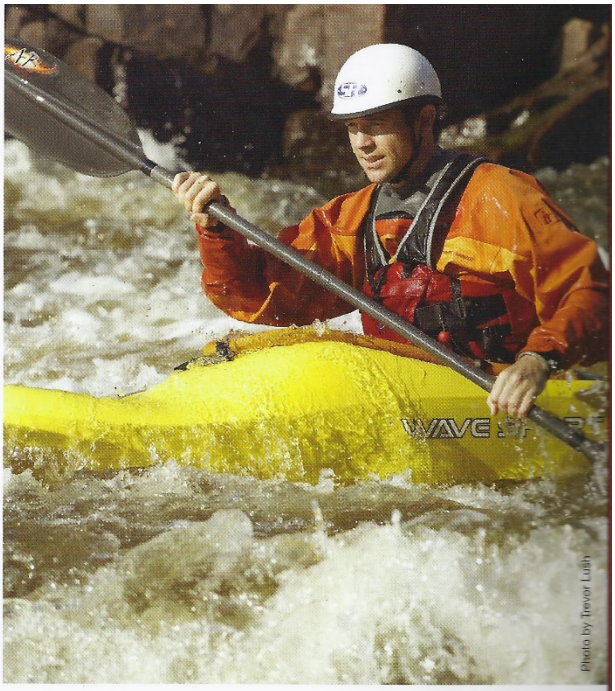
PADDLING POSTURE

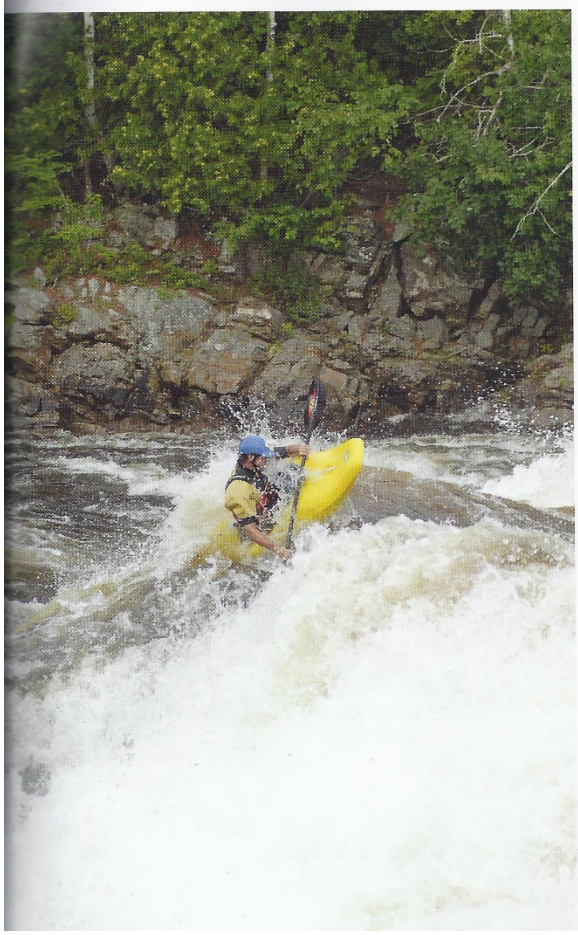
Paddling posture refers to the different ways your body positioning can help with the control and balance of your kayak. As with most dynamic sports, posture plays an important role in paddling performance. For example, if you are familiar with skiing you know what it feels like to stray from the proper body position. When you get caught leaning back, your weight is on the tails of the skis and you lose control. When you fall over to one side, you go into survival mode trying to recover. When your weight is too far forward, odds are your tips dig in, or you go for a nasty yet acrobatic tumble. Similarly in kayaking, the goal is to maintain control of your centre of gravity to prevent crashing and burning. There are two aspects to paddling posture: lateral balance (edge to edge) and body position. Both rely on the first Golden Rule of upper-lower body separation.



A moderately aggressive position provides the most flexibility, balance, and control.

Lateral Balance

Lateral balance involves keeping your weight over the centre of the boat and not off to one side. In flat water this is fairly straightforward, but in whitewater it requires that you be loose at the hips and allow the boat to tilt on edge without your upper body doing the same. A classic analogy of this technique is the belly dancer, who can wildly fling the hips while remaining perfectly still in the upper body. Whitewater can act in many ways to rock your boat from edge to edge, but if your hips are loose and your body stays over the boat, you will be fine. It's when you stiffen up or let your weight fall to one side that you're likely to take the plunge!



Body Position

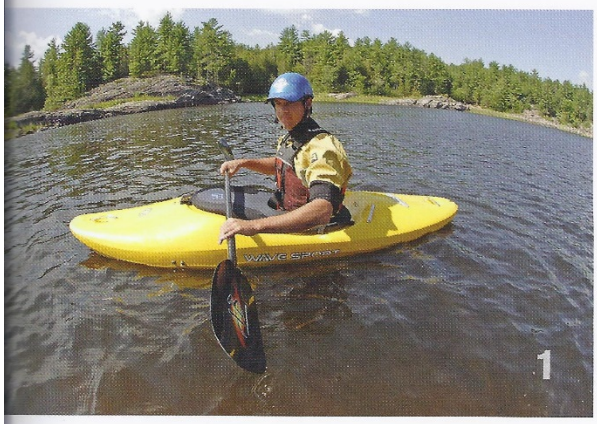
Body position refers to your lean along the length of the boat, again assuming separation at the hips. In this context, an aggressive position is a strong forward lean; a neutral position is sitting straight up; and a defensive position is leaning back. Acknowledging that you will inevitably spend some time recovering, the goal is to paddle as often as possible in the position that best prepares you to deal with dynamic situations. You want to sit in a position that allows you the most flexibility, balance, and control to minimize the amount of time your spend recovering. This default body position in kayaking is sitting with a moderately aggressive lean. To achieve this, sit up straight with your butt against the back band and then bend slightly forward at the hips. Pretend a rope secured to the bow of your boat was attached to your belly button and someone pulled the slack right out of it. It is not a slouch—your stomach muscles need to be turned on and ready.

The most common problem paddlers have is "getting in the back seat." When this happens, your weight shifts onto the stern edges, which causes you to sink slightly and exposes you to all the weird and wonderful effects of river currents. The back seat position also compromises your control, making it difficult to take efficient strokes or balance the boat on edge.

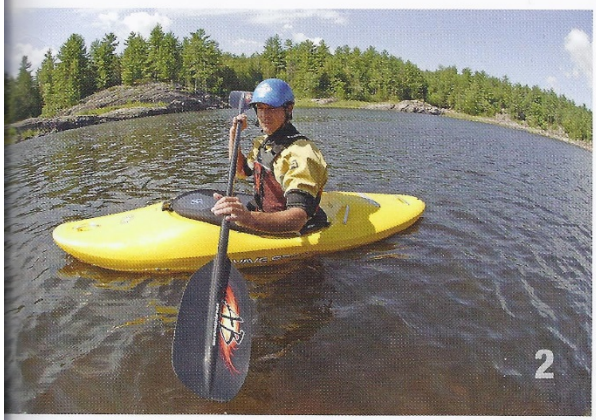
USING YOUR PADDLE

As we mentioned earlier, the paddle evolves into an extension of your arms and is probably the piece of gear you will become most intimate with. You're more likely to go through a few boats than you are to change paddles, especially once you've found your match. We've already discussed how to choose a paddle, so now let's look at how to use it.

A kayak paddle should be held with your hands an equal distance from the blades and slightly more than shoulder width apart. Having your hands too far out makes for very awkward strokes, while having your hands too far in toward the centre will cost you substantially in the amount of force you can apply at the blades. A great way to establish the correct hand placement is to position the centre of the paddle on top of your head and then grip the paddle so that your elbows are bent at approximately ninety degrees.



Your "control" hand keeps a firm grip while the "grease" hand is loose enough to allow the shaft to rotate within it.



As the "control" hand lifts, the "grease" hand allows the shaft to rotate.

Knowing roughly where your hands should be, the next thing to look at is whether or not your paddle has any feather to contend with. Feathered paddles have blades offset at different angles. As one blade pulls through the water, the angle of the other blade allows it to slice through any wind. Feathered paddles are traditional and can make a small difference if you're paddling in an area with high winds, but they are less intuitive to use and by no means essential. We're now going to look at how to use a heavily feathered paddle since the same concept gets applied when using a non-feathered paddle, but to a lesser extent.

First of all, being left- or right-handed has an important impact on your paddling, as it dictates which is your control hand. Quite simply, for a right-handed paddler, the control hand is the right; for a left-handed paddler, the control hand is the left. Having said this, it's becoming increasingly common for all paddlers to learn with right-handed control paddles. The reason for this is simple: left-handed control paddles are very uncommon, so finding a replacement is highly unlikely in the event that you break, forget, or lose your paddle. Your "control" hand is the hand that grips the shaft firmly at all times, which is why we also call it the "glue" hand. The opposite hand, in contrast, is often referred to as the "grease" hand. The control hand's grip should never change whether you're forward paddling, bracing, rolling, playboating or running waterfalls. It's your reference point for how the paddle will react and you need to be able to rely on it automatically. The big knuckles of your control hand should be aligned with the top edge of your paddle blade. After taking a stroke with your control hand side, you'll loosen your grip with your grease hand so that you can rotate the shaft within it. This rotation is necessary to accommodate the feather of your paddle, and lets you place the next blade in the water squarely. This loosening of the grease hand and the rotation of the shaft within it takes place between each stroke.

If you're using a paddle with no feather you can get away with not rotating the paddle between each stroke. However it is ideal to use this same technique in a scaled-

back way because there is naturally a small amount of rotation associated with paddling. If you don't let the paddle shaft rotate a little in your grease hand, you'll find that wrist doing small curls while you paddle, which can gradually result in an injury or strain.

On a final note, it's important that you keep your control hand grip on the paddle secure, but as light as possible. A light grip will let you paddle more comfortably for longer and is instrumental in avoiding overuse injuries such as tendonitis in the wrist and elbow.

INDEX YOUR PADDLE

Most paddles will have some degree of an oval shape to the shaft at the control hand to help "index" your grip. This lets you grip your paddle correctly without having to look down at your hand. You can add to the index by taping some additional material in a position underneath the knuckles of your control hand. The oval shape of the shaft also helps to prevent the shaft from turning in your control hand. You can supplement your control hand's grip with grip tape or paddle wax.

SHOULDER SAFETY

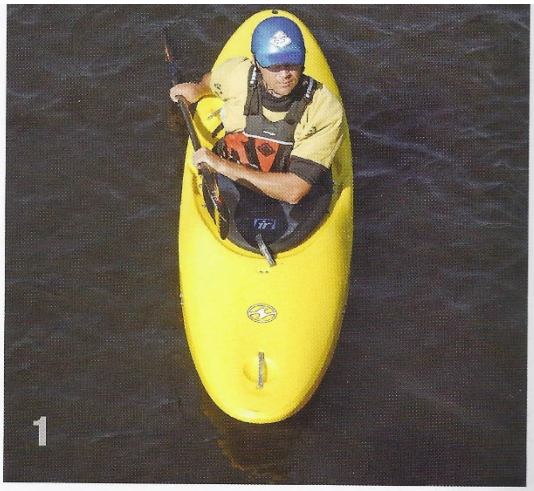
The shoulder dislocation is to kayaking what a blown knee is to skiing. Why is this injury so dreaded? The pain factor doesn't seem to drive the fear into paddlers' hearts; it's more the thought of having to go through surgery, of sitting idle through months of therapy, of the shoulder never again being as strong as it was. Unfortunately these are substantiated concerns, as a shoulder dislocation is often accompanied by damage to the joint that requires real care, and sometimes surgery, to heal. These are all good reasons for us to take a good look at how to keep our shoulders safe.

It goes without saying that having well-conditioned muscles around the shoulder will go a long way towards keeping the joint in place. It should be noted that paddlers often have much stronger back shoulder muscles than front, as these are the muscles used primarily for forward paddling. Seeing as the majority of shoulders dislocate forwards, your goal should be to make the front muscles equally as strong as the back. This is where back paddling practice comes in. But even with Superman's shoulders, a dislocation can easily happen, though there are two simple rules that, when followed, will go a long way towards keeping your arms intact. The first: don't overextend your arms. The second: maintain a "power position" with your arms. Let's look at both of these in more detail.

1. The idea of not overextending your arms is a simple concept to appreciate, but it isn't always so simple to apply. When you're getting tossed around in whitewater, the desire to keep your head above the water can easily override any safe paddling practices. Try to stay as relaxed as possible and fight the urge to use massive "Geronimo" braces.

2. So what is the "power position"? When looking at your body from above, let's imagine an invisible line that passes through both shoulders. The power position simply involves keeping your hands in front of this line. In so doing, you'll maintain a rectangle (often called "the box") with your arms, paddle, and chest. With this rectangle formed, you get the most power from your paddle and your shoulders stay in the safest position.

When a hand falls behind you, the arm is in a very vulnerable position. Does this mean that you can't safely reach to the back of your kayak? Not at all! It means that in order to reach to the back of your kayak you'll need to rotate your whole torso so that your arms stay in the power position. This act of rotating your whole torso is fittingly named torso rotation. Torso rotation is not only responsible for keeping your shoulders safe, but it is one of the Three Golden Rules of whitewater paddling (see "Three Golden Rules" section).



A stroke is planted at the back of the boat without any torso rotation.

The same stroke is planted at the back of the boat while maintaining the power position.

To cut back while surfing a hole, Nicole rotates her upper body in the direction she wants to go and plants her paddle securely in the water. Her stomach muscles can now help turn the boat.

2. Use the Power of your Torso

To make the most of each stroke, you'll need to use much more than just your arm and shoulder muscles. Whether you're propelling the boat or turning it, your goal is to harness the power available from your entire upper body. We refer to this as torso rotation. It is the way you get your front and side (oblique) stomach muscles involved with your strokes. Using these larger muscle groups will maximize the strength of each stroke, and will improve your stamina as your efforts are spread over more muscles.

There are three components to torso rotation: the winding up of the body, the planting of a pivot blade, and the unwinding of the body. To wind up, turn your upper body at the hips in the direction you want to go. At this point, your stomach and chest should no longer face the direction that your kayak does. Once your body is wound up, plant your paddle blade completely in the water as a pivot. As you push or pull on this pivot blade, draw on your stomach muscles to force the body back to its (unwound) position of rest.

This act of using the stomach muscles to return your body to its position of rest is what we refer to as unwinding the body. One applicable analogy is that of an elastic band. The further you stretch it, the more it will sting when it makes contact! Similarly, the more you wind up, the more power you will have available to you. It would be excessive to fully wind up your body for every single stroke, but your stomach muscles should always be involved.

Torso rotation is also an important way of protecting your shoulders from injury. As a rule of thumb, you want to keep your hands in front of your upper body. By turning your whole torso, you can reach as far back as you want with a blade and still be in a safe position, while at the same time harnessing more power for your strokes.

PROPULSION STROKES

Forward Stroke

Whitewater kayaks are designed to turn efficiently, so mastering a stroke that is supposed to make them go straight isn't going to be easy. When you're learning, there's a good chance that you'll find paddling in a straight line next to impossible, and so you'll probably be happy to hear that you're not the only one. In fact, no one can paddle a whitewater kayak in a straight line. Even the best whitewater paddlers are turning back and forth slightly with each stroke. What happens is that as you get better, you start anticipating any corrections rather than reacting to the actions of your kayak.

Although any stroke that gets your kayak moving forward is fine, by learning correct technique you'll be able to get where you want to go more efficiently and with the least amount of wasted effort. Having said this, we're going to be looking at what could be considered the ideal forward stroke. The reality is that each of your forward strokes will need to be modified slightly to accommodate any correction that is needed.

The forward stroke can be broken down into three parts: catch, rotation, and recovery.

The Catch

The catch refers to the start of the stroke, when you place a paddle blade in the water. Sitting up straight, with a relaxed grip on your paddle, reach to your toes and plant your blade fully in the water. This reaching action involves both your arms and your shoulders. Do not lean forward at the waist to reach to your toes, but rather twist from the waist. If you're reaching for a stroke with your right blade, you'll push your right shoulder forward while reaching with your right arm. This shoulder-reach causes you to rotate your upper torso or "wind-up" your body. As we already know, this torso rotation lets you harness the power of your front and side stomach muscles for strokes, rather than just using your arms. With your body wound up, you'll plant the full blade in the water, pull on your paddle and unwind your upper body to drive your boat forward.

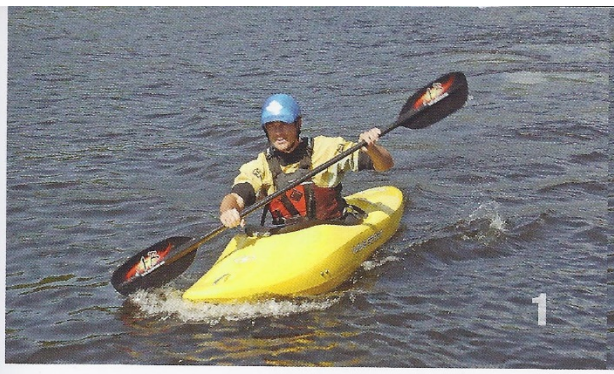
One of the most common mistakes is pulling on the forward stroke before the blade is fully planted in the water. If you're doing this, you'll notice your strokes creating a lot of splash, which means that you're actually wasting energy pulling water past your kayak, rather than pulling your kayak forward through the water. To understand this better, imagine that you're planting your paddle in cement when you take a stroke. The paddle shouldn't really move anywhere once it's planted. Instead, you're pulling yourself past that paddle blade. The only way this will work is if you have fully and securely planted your whole blade in the water.

Rotation

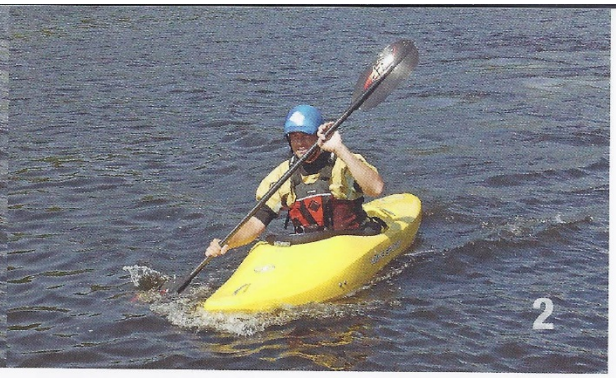
Your body is like an elastic band in that once it's wound up, you'll have a lot of potential energy at your command. Rotation refers to the way you'll use this energy to power your forward stroke.

As described above, when taking a forward stroke, your body gets wound up and your paddle is planted at your toes. You'll now pull on your paddle and drive your kayak forward using as much of your large torso muscles as possible, rather than relying on your comparatively weak arms to do the work. In fact, a good way to think about this is that your arms are just a supplement to the power of your torso. True power comes from your stomach, side, and back muscles. To get a feel for this, try paddling forward with your arms locked completely straight at the elbows. Although it won't be comfortable to paddle like this, you can really get your boat moving using only the rotation of your torso to power your kayak forward.

Now that you're engaging the most powerful muscles, let's take a quick look at what the rest of your body will be doing. With elbows bent and staying low, pull on the paddle with your arms as you take each stroke. The range

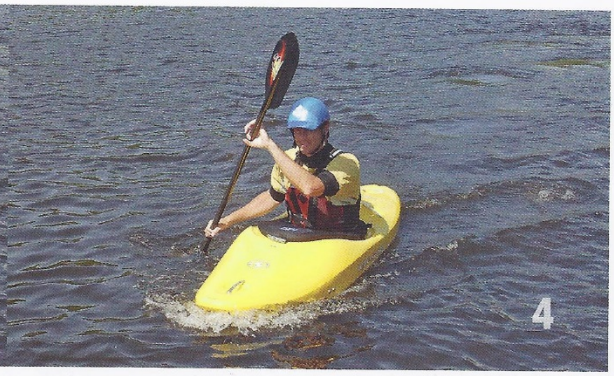


Rotate your whole upper body to plant your blade at your toes.

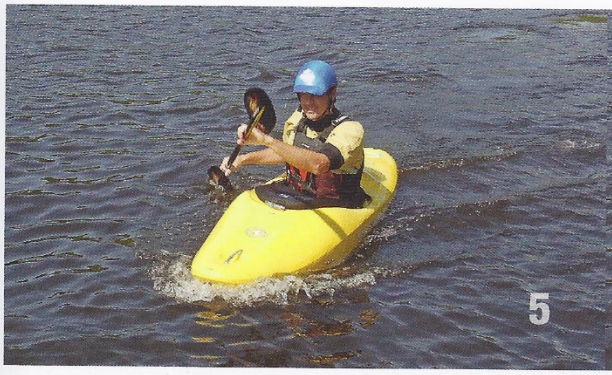


Plant your blade deeply in the water to get the most power.

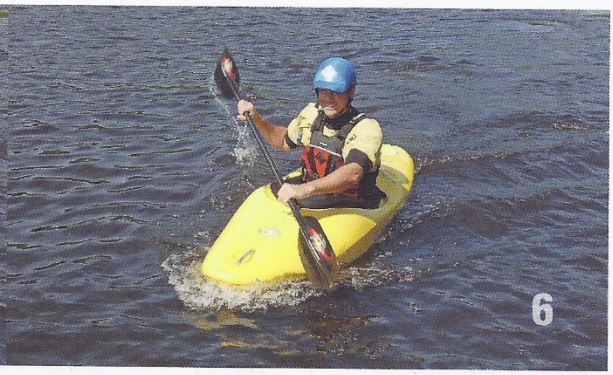
The top arm stays bent with the hand around eye level as you unwind your torso and pull the blade through the water.



The more vertical your paddle stays during the stroke, the more power it will offer.



When the blade reaches a point beside your hip, slice it out of the water out to the side.



Wind up for the next stroke by reaching with your other arm and shoulder.

of motion for your arms will be quite small since your torso will be doing the bulk of the work. As a general rule, the more vertical the paddle shaft is while taking a forward stroke, the more forward power you're getting from it. To get the paddle more vertical, bring your top hand higher and further across your boat. In contrast, the less vertical your paddle shaft is the more directional control you are exercising, which means that the stroke will be more effective for course correction at the sacrifice of forward propulsion. Since, as we already discussed, whitewater kayaks are constantly turning and therefore in need of correction, the verticality of your strokes will be in constant flux

Recovery

The recovery is the point at which your forward stroke ends and the blade is removed from the water. This happens at your hip, which is earlier than most paddlers think. When your stroke reaches your hip, slice your paddle out of the water and get ready for the next stroke. At this point, your body should have unwound past its position of rest, and be wound up, ready to catch your other blade on the opposite side.

Now that you understand the upper body motions involved with the forward stroke, it's important to look at the actions of your kayak because it is an important factor in the effectiveness of your forward stroke, particularly when paddling in current and/or when using a short kayak with low-volume ends. In both cases, by paddling forward with a moderately aggressive forward position (the default body position), there is a significant chance that your bow will dive underwater. To avoid this, there are two things that you can do. First off, you can tilt your boat a little and very briefly into each stroke that you take. Doing this will pull your stern slightly underwater and lift your bow upwards. This forward paddling technique will come in really handy when ferrying, or when paddling through wave trains, but keep in mind that your forward strokes are most effective with a level boat—so minimize the amount of tilt you use. Although this is an incredibly effective means of keeping your bow on top of the water sometimes it just won't be enough and you'll have no choice but to lean back as well. For instance, you may need to lean back when crossing eddy lines, or when paddling against the current as you do when ferrying. It's important to understand that there's no problem with leaning back, as long as you return to your neutral or moderately aggressive position as soon as it is possible.

Although you might have figured that the forward stroke would be the easiest stroke to master, there are a remarkable number of things that you need to think about. In fact, entire books have been written just on the forward stroke! Try focusing on each component individually and don't get frustrated when your boat doesn't respond the way you want it to. Remember that whitewater kayaks were not designed to go straight.

Back Stroke

Most paddlers will develop a forward stroke that is powerful enough to get them where they need to go, but very few paddlers ever reach that same level of comfort with their back stroke!

Taking the time to practise your back paddling will go a long way toward improving your overall skills. Not only will the practice make your stroke more effective, you'll have an increased awareness when you find yourself backward on the river. Working on the back stroke is also a great way to help prevent shoulder injuries. For anatomical reasons, shoulder dislocations are anterior (forward) over 90% of the time. The back stroke strengthens important front shoulder muscles that the forward stroke misses. This may not stop a dislocation from happening, but it can certainly help prevent it. So let's take a look at a few things to keep in mind when practising backward paddling.

Your back stroke will begin just behind your hip and end at your toes. At first you'll probably find that your top hand is quite low during your strokes because of all

the corrections you're making to keep yourself moving in the right direction. Although there's nothing wrong with this, it needs to be understood that the ideal back stroke has your top hand between shoulder and eye level, where you'll get the most push from your stroke.

It should come as no surprise now that the power for your back stroke doesn't come from your arms alone, but from torso rotation. This means you need to wind up your upper body to plant every back stroke. You do so by turning your chest to face the knee on the stroking side of the kayak. Now with your paddle blade planted fully in the water, push on your back stroke and unwind your torso by driving your back shoulder forward.

Keep your weight forward as you rotate your upper body and plant your back stroke just behind your hip.

Tilt your kayak slightly into your back stroke to lift the stern out of the water.

The back stroke ends when your blade reaches your toes, at which time your boat should be level.

Stay forward, wind up for your next stroke and tilt your boat slightly in the opposite direction.

The sweep begins at the toes, with the body wound up and facing in the direction you'd like to turn.

Sweep as wide an arc as possible to get the most turning power.

Pull your arm in towards your body as your sweep nears its end.

Remove the paddle from the water before the blade gets pinned against the stern of your kayak.

Forward Sweep

The forward sweep stroke can be used while stationary, or while moving. The nice thing about using it while moving is that it lets you turn your boat effectively while keeping your forward speed going.

Start the sweep by rotating your torso and head in the direction you want to turn. Now, on the side opposite to that which you are facing, place the blade completely in the water at the front of the boat, as if you were taking a forward stroke. The difference is that you will keep the top hand nice and low with the elbow bent. This hand should remain between chest and chin height to orient the paddle more horizontally than vertically.

For a complete forward sweep, your blade will follow a wide arc that starts at the bow, extends out to the side, and pulls in at your stern. Throughout the stroke (or at least until near its end), your top arm is low and bent, while your bottom arm is straight. To maximize power, when you pull on the blade, try to pull your legs around with your stomach muscles at the same time. This will become more and more important as you progress into advanced techniques.

Once your sweep stroke has reached the three-quarters of the way mark, your tactics will change for what we call the recovery phase. Your goal is to avoid having your paddle get pinned against your kayak, or putting your shoulder in a position of risk. To do these things, you'll pull your back arm in towards your body at the end of the stroke and remove your paddle from the water.

To just change or correct the direction of the boat slightly instead of doing a complete turn, you can use a partial sweep. Do this by starting with your blade anywhere along the arc and finishing at the stern, but still rotate! (See "Stern Draw" for more information on correcting direction.)

Draw Strokes

Although there are a variety of draw strokes that we'll be looking at in this chapter, this segment focuses on the draws that move your kayak sideways. These most basic forms of the draw stroke are useful for pulling up beside someone or something or lining up your kayak in river situations.

Basic Draw Stroke

The basic draw involves rotating your torso to face the direction in which you want to draw yourself. You'll then reach out to the side of your hip and plant your paddle about two feet away with the power face towards you and the paddle held as vertically as possible. The more you can twist at the hips, the easier this will be to achieve. The boat should remain flat to avoid catching an edge. When your blade is completely in the water, pull your lower hand in towards your hip. Your top hand will stay very stationary, acting as the pivot point for the stroke. Before your paddle hits your boat, you'll need to finish the stroke by slicing the blade out of the water towards the stern. Be careful

that you do not bring your paddle too close to the side of your kayak before finishing the stroke, as it can get pinned and throw you off balance. The paddle should exit about three to six inches away from the side of your kayak.

T-Stroke

Once you're comfortable with the basic draw, you're ready for the T-stroke. The only difference between the two is that instead of slicing the blade out of the water towards the stern, you'll keep it in the water, curl your wrists forward ninety degrees and slice the blade back out

1. Plant your draw stroke directly out to the side of your kayak, with your head and body rotated to face the shaft, and your paddle held as vertical as possible.
2. While your top hand stays very still, your bottom hand pulls in towards your body until your blade is 6" away from your boat.
3. The T-stroke involves curling your wrists forward and slicing the blade back out to where it started.
4. Notice how aggressively the upper body stays turned towards the draw stroke.

to its starting position. This in-water recovery will help develop valuable paddle dexterity, but more importantly, it allows you to follow the third Golden Rule—keeping an active blade in the water. By doing so, you are maintaining steady control of your kayak—effectively keeping your hands on the steering wheel.

Sculling Draw

The most advanced and powerful technique for drawing your kayak sideways is called the sculling draw.

The sculling draw is set up in the same way as the T-stroke—with your upper body rotated towards it, your paddle shaft positioned as vertically as possible, and your blade fully planted in the water at ninety degrees from your hip. The difference between the two strokes lies in how you'll pull on your paddle. Instead of pulling your blade directly into your hip, you'll use something called a sculling motion. This sculling motion lets you pull steadily on your paddle, and bypasses the recovery phase that the T-stroke requires.

The key to sculling is keeping your paddle blade moving along a short path forward and backward about a foot or two out to the side of your kayak, with a blade angle that opens your power face to the oncoming water and pulls your paddle away from your kayak. This unique blade angle is commonly referred to as a "climbing angle." Climbing angle means that the leading edge of your paddle blade is higher than the trailing edge. It's the same as spreading jam on toast: picture the knife's angle as it glides over the bread's surface, leading edge higher than the trailing edge. To maintain a climbing angle on your blade while performing the sculling draw you'll cock your wrists slightly back as you slice your blade forward. You'll then make a quick transition and curl your wrists slightly forward as you slice your blade backward. Keep in mind that the change in blade angle is subtle. If you open your power face too much, you'll be pushing your kayak forward and backward rather than drawing it sideways.

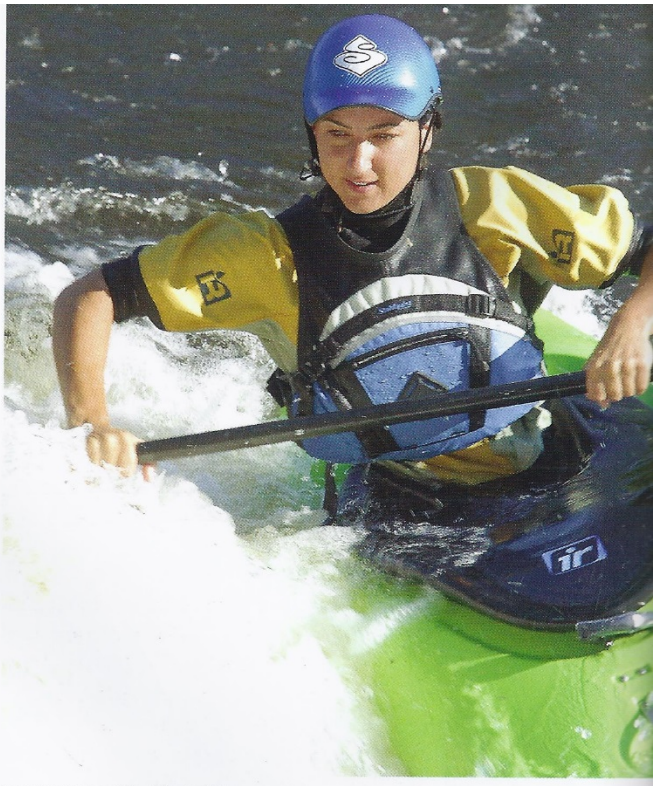
Using this sculling technique, you can apply steady drawing pressure with your paddle blade and move your boat laterally at a surprising speed. Don't forget that just like any other stroke, the power for your sculling draw comes from your torso rotation. This is why it's so important that you turn your body aggressively into the stroke. The forward and backward movement of your paddle can then be driven by your torso rotation, while your arms will stay in a relatively fixed position.

Sculling involves maintaining a climbing angle on your blade, which you do by cocking your wrists back as you push your blade to the bow and curling your wrists forward as you pull the blade towards the stern.

STABILITY STROKES

Braces

No matter how good your balance is, sometimes you will lose it. A brace is a stroke used to recover when you've been thrown off balance. There are two basic forms of braces: the "high" and "low" brace. Both involve reaching out to the side of your kayak with your paddle and slapping the water with one blade, which provides the support needed for your body to right the boat. The only major difference between the two is the position of your paddle. It's critical to understand that the slap of the paddle just provides momentary support. It's your body that's responsible for the rest. Let's take a quick look at how it does this.



Low bracing while side surfing.

As you flip, the only way to right the kayak is by pulling up with the knee that is going underwater. The only way to pull up with this bottom knee is to drop your head towards the water in the direction that you're flipping. Doing this is extremely counter-intuitive, but it's absolutely essential. Your head should be the last thing to come back up on a well-executed brace. If, instead, you lift your head up, you'll inadvertently pull on your top knee, which simply flips you even more quickly. To make

sure that your head drops towards the water, try watching your slapping blade as you brace. It's hard to lift your head if you're looking down.

Low Brace

The low brace is so named because the paddle is kept very low. To set your paddle up for a low brace, sit upright and roll the paddle under your elbows so that your forearms are virtually vertical. Think of a push-up position. From here, you'll reach out to ninety degrees so that one hand is at your belly button and the other is out over the water. You'll then smack the water with the non-power face or backside of your paddle blade. Practise slapping the water on alternating sides, making sure that your paddle hits the water flat. If your paddle has any type of feather, you'll need to rotate the paddle in your grease hand in order to slap the water with a flat backside of your blade. After slapping the water, slide your paddle forward and inward, and roll your knuckles upward to clear the blade from the water.

When you get comfortable with these motions, start edging the boat slightly in the direction that you brace. As you slap the water, drop your head in that direction and pull up with your lower knee to level off the kayak. Keep practising these motions until they become natural, and then start pushing your boat tilts further and further.

The low brace is a great reactionary brace that can be thrown in at less than a second's notice. Once you're comfortable with it, the low brace will become your best recovery technique, and it also keeps your shoulders really well protected from injury.

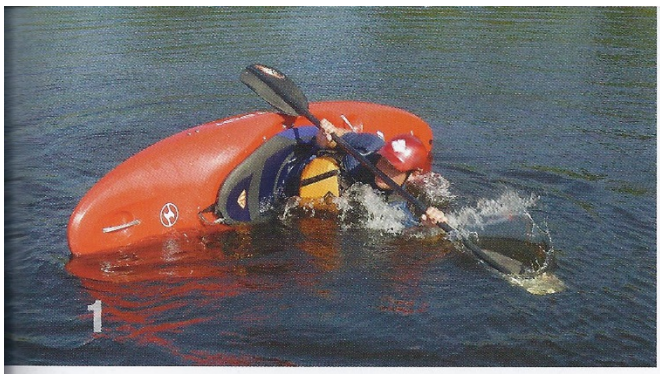
High Brace

The high brace is definitely the most powerful of the recovery techniques. A good paddler can even use the high brace to recover when their boat is almost completely upside-down! The problem with the high brace is that it's easy to rely on it too much, which can put your shoulders

The low brace uses the back side of your paddle against the water, which means rolling your paddle and hands into a push-up position.

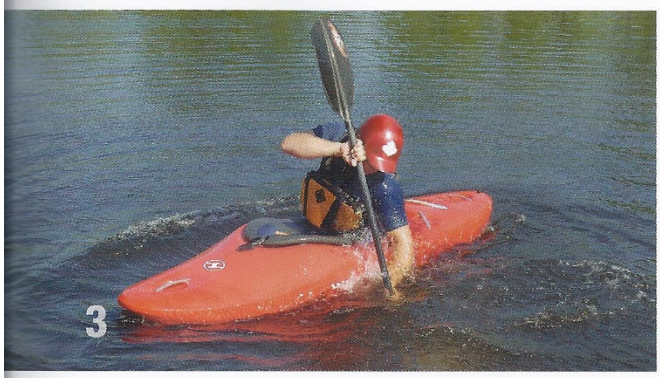
Dropping your head toward the fall lets you completely right your kayak with your lower body.

Clear the blade from the water by slicing your paddle forward and upward.



The high brace uses the power face of your paddle against the water, which means rolling your paddle into a pull-up position.

Drop your head towards the water so that you can hip-snap the boat upright.



The high brace can be very powerful, but remember to keep your hands low and your shoulders safe.

at risk. So the first thing to keep in mind is that despite its name, you need to keep your paddle and your hands low and in front of your body. Otherwise, the high brace follows the same rules as the low brace; only for the high brace you'll use your paddle in a "chin-up" position, instead of the "push-up" position. This means you'll be using the power face instead of the backside of your blades to contact the water.

Starting with a flat boat, keep your elbows low and roll your paddle up until your forearms are almost vertical. You'll now reach out over the water at ninety degrees, with your inside arm low, in what is sometimes called the "nose pick'" position. It's important that this hand stay low so that your paddle blade is as flat to the water surface as possible when it makes contact, offering you the most support. After slapping the water, pull your paddle blade inward and out of the water.

Once you're comfortable high bracing on both sides, start tilting your boat slightly, and combine the head drop and knee pull-up with your motions. This means that as you slap the water, you'll drop your head towards the water and pull up with your lower knee to right the kayak. Remember that looking at your active blade is a good habit to get into as it helps keep your head down.

As you perfect the high brace, you'll be amazed at how powerful it can be. Just remember that for even the biggest high braces, you've got to keep your hands low to keep your shoulders safe from injury.

Eddies

An eddy is a pocket of water directly downstream from some form of obstruction, for example, a rock or a part of the river bank that juts out. The deflection of water by the obstruction creates a relatively calm area below—a paddler's parking spot. The concept is quite simple. When water is deflected, it's pushed away from one area and towards another, creating a differential in the amount of water between the two areas. Because of gravity, the river naturally wants to equalize this differential by flattening itself out. To achieve this, the water circles back into the area that it was originally deflected away from. The result is an eddy on the downstream side of the obstruction. This flow creates an upstream current (from bottom to top) in the eddy that can vary in strength from being almost unnoticeable to very powerful. In big enough eddies on high-volume rivers you can actually have Class 3 whitewater, or an eddy within an eddy! Very small eddies, just big enough to accommodate a kayak, are commonly called "micro-eddies."

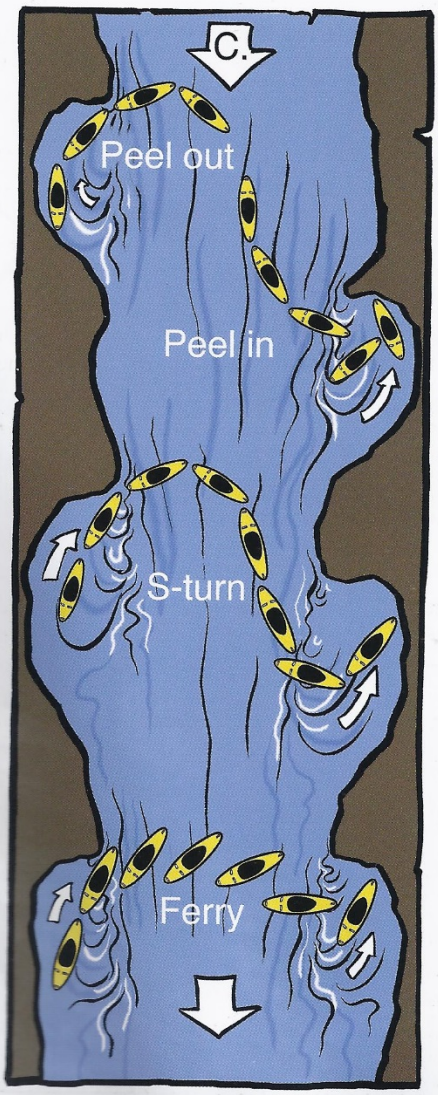
For this "River Running" segment we're going to start by looking at eddy turns and ferries in their most basic and ideal forms. We're then going to look at other skills and techniques that will come in handy, including the scouting of a rapid and the picking of a line.

EDDY TURNS

Eddy turn refers to the action of moving from the main current into an eddy, or vice-versa. This is also commonly referred to as "peeling" in and out, or "eddying" in and out. Whether you're eddying in, or peeling out of an eddy, your goal is to break completely through the eddy line and to carve a smooth, arcing turn in which your kayak maintains its forward momentum.

To this point, we've looked at the individual components that are required to make a smooth eddy turn. It's now simply a matter of piecing these skills together with the right plan of action. This plan of action is determined by your end goal and by the power and variety of the currents that you're dealing with.

As you may have already learned, and as we will discuss further in the "Picking a Line" segment, your success in running rapids relies heavily on your ability to look ahead and take actions that set you up for what is coming next. For simplicity's sake, let's assume that you're pulling out of an eddy and into a mild current without obstacles. Your goal is to carve a smooth turn into the middle of the current and then head downstream. You now need to decide on how much speed, angle, and spin momentum is necessary to achieve this goal. Again, these decisions depend on the strength of current that you're dealing with. As a general rule, you always want to cross eddy lines aggressively. The stronger the current, the more aggressive you'll want to be. This might seem like a simple enough rule, but the reality is that as currents get stronger, paddlers often become more timid. An aggressive approach is vital, though, as it ensures that you'll break right through the eddy line and into the main current. Breaking through the eddy line, as opposed to getting stuck on it, means avoiding one of the most unstable and unpredictable spots on the river. Seeing as we are considering relatively mild current for this example, you will be taking a moderately



aggressive approach.

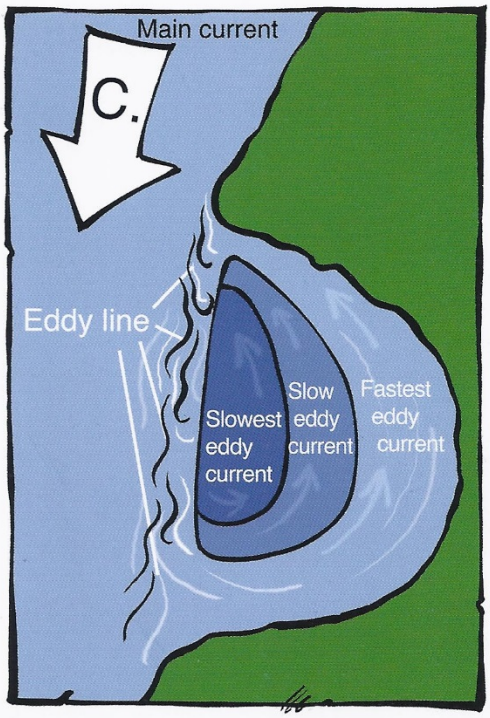
Clearly, every situation will require a slightly different approach, but the basic eddy turn we're going to look at can be slightly modified to work in any circumstance. Your plan of action involves building up enough forward momentum to take you completely across the eddy line at about a forty-five-degree angle. As you break through the eddy line, you want your kayak to carve a smooth arc and end up facing downstream. This basic eddy turn starts with a good set-up position and the right angle, forward strokes to build forward momentum, a stern draw to establish the boat's carving direction (spin momentum), a power stroke to pull the boat completely across the eddy line, and a gliding draw to carve a smooth turn downstream. Let's look more closely at each of these steps.

A good set-up position gives you time to build adequate forward momentum that will take you across the eddy line at around a forty-five-degree angle. There are a couple of things to consider when deciding on your set-up position.

Firstly, it needs to be recognized that the inside of an eddy provides the calmest water and will result in the least amount of "drift" on your approach. Drift is the movement of your kayak by the current in a direction other than the one in which you wish to go. The outside of an eddy has the quickest current and will thus result in the most drift. Learning paddlers have a tendency to hang out on the outside of eddies, where they are closest to shore. This actually complicates their set-up as they will drift more on their approach.

A second issue to consider is that eddy lines are most defined and narrowest at their source (the top). This makes it the preferred area to cross, because there is less "funny water" and the water is more predictable there.

Having established a good set-up position and built up some forward speed, you then need to give your kayak a slight amount of turning momentum before you completely cross the eddy line. This turning momentum ensures that your kayak will carve in the right direction.



When setting up your eddy turn, keep in mind that the inside of the eddy is the calmest, and the best place to begin your approach.

THE THREE GOLDEN RULES

The Three Golden Rules will apply to your paddling from here on. Whether you're running your first river or surfing a huge wave, you need to separate your body movements, use the power of your torso, and maintain control of your kayak with an active blade. These three rules will serve as a checklist for you to refer back to as long as you paddle. You will notice them being applied to virtually every technique we discuss in this book. Let's have a closer look . . .

1. Separate Your Body Movements

The best kayakers have mastered the art of letting their upper and lower bodies work independently, yet cooperatively with each other. This means there needs to be a distinct separation of movements at the hips. Early on you will become comfortable with this separation as it applies to leaning forward and backward. As you progress, it will become a key ingredient of balancing your boat on edge and staying ahead of your boat as it spins.

By letting his upper and lower bodies work independently but cooperatively with each other, Ken tilts his boat aggressively during an eddy turn.

To cut back while surfing a hole, Nicole rotates her upper body in the direction she wants to go and plants her paddle securely in the water. Her stomach muscles can now help turn the boat.

2. Use the Power of your Torso

To make the most of each stroke, you'll need to use much more than just your arm and shoulder muscles. Whether you're propelling the boat or turning it, your goal is to harness the power available from your entire upper body. We refer to this as torso rotation. It is the way you get your front and side (oblique) stomach muscles involved with your strokes. Using these larger muscle groups will maximize the strength of each stroke, and will improve your stamina as your efforts are spread over more muscles.

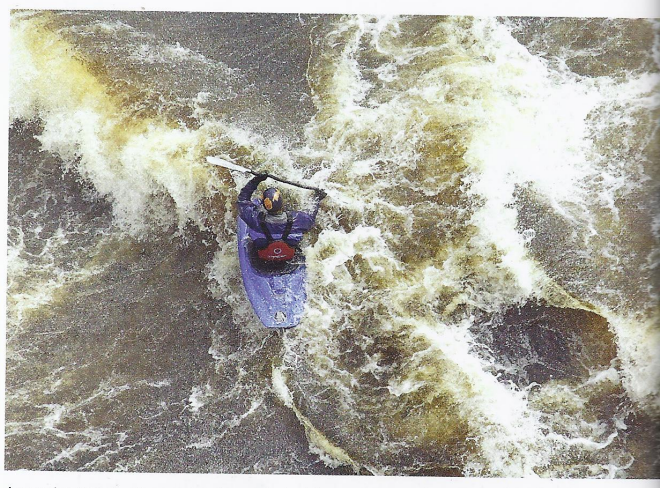
There are three components to torso rotation: the winding up of the body, the planting of a pivot blade, and the unwinding of the body. To wind up, turn your upper body at the hips in the direction you want to go. At this point, your stomach and chest should no longer face the direction that your kayak does. Once your body is wound up, plant your paddle blade completely in the water as a pivot. As you push or pull on this pivot blade, draw on your stomach muscles to force the body back to its (unwound) position of rest.

This act of using the stomach muscles to return your body to its position of rest is what we refer to as unwinding the body. One applicable analogy is that of an elastic band. The further you stretch it, the more it will sting when it makes contact! Similarly, the more you wind up, the more power you will have available to you. It would be excessive to fully wind up your body for every single stroke, but your stomach muscles should always be involved.

Torso rotation is also an important way of protecting your shoulders from injury. As a rule of thumb, you want to keep your hands in front of your upper body. By turning your whole torso, you can reach as far back as you want with a blade and still be in a safe position, while at the same time harnessing more power for your strokes.

3. Maintain Control with an Active Blade

Today's whitewater kayaks are incredibly responsive. As such, they are very easy to manoeuvre, but are more susceptible to being pushed around by even the smallest river features. Whereas longer boats can cruise through waves or different currents with less effort, smaller boats



An active blade allows steady control while paddling through a large and breaking wave train.