Paddling Made Easy

Part II: Strategies on how to perfect your paddle stroke by feel

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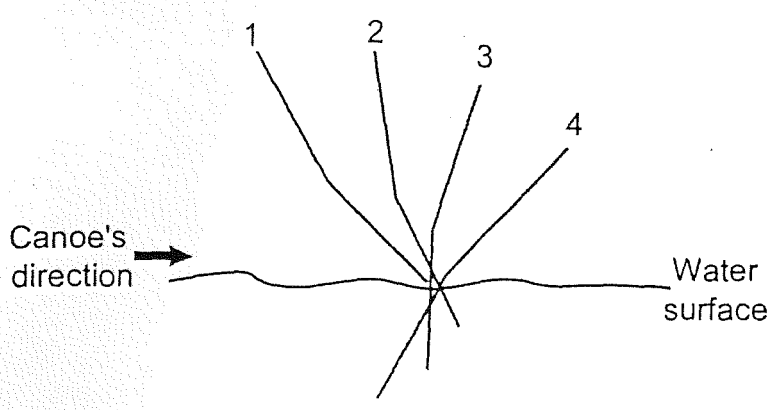
Developing an efficient canoe stroke is not difficult if you understand the basic physics behind the stroke and learn how to perfect your stroke by feel. In Part 1 of this two part article, stroke physics were discussed as well as the basic arm and shoulder movement of the stroke. In this article, the strategies of how to perfect the stroke by feel will be covered. You will learn how to sense paddle slippage and know how to instinctively adjust your stroke technique to reduce slippage and increase stroke efficiency.

In Part 1, we learned that the blade should push against "still water." As soon as the water begins to move, slippage occurs and stroke efficiency is lost. Proper blade angle and proper power progression are key factors here (see Figure 1). As the blade arcs through the water, the power should progressively increase with the greatest amount of power exerted when the blade is near the stroke's perpendicular range and the blade is fully submerged. As the blade arcs past the perpendicular range (behind the hip), power should decrease rapidly.

Figure 1: Power Phase, Paddle on Right Side



Remember, water's resistance to moving is greatest when your blade is fully submerged and in the perpendicular range of the stroke. This is what minimizes slippage. So how do we know when slippage is occurring and how do we adjust our stroke to minimize it?

Paddle slippage is rather like walking on a slippery floor or icy surface. To avoid slipping on a slippery surface, we instinctively walk more flat-footed and shorten our stride. Making these two adjustments in our walking stride increases friction between our foot and the walking surface. By contrast, any attempt to walk fast also reduces surface friction and increases the chance of slipping. Thus, anything we can do to increase friction is what reduces slippage

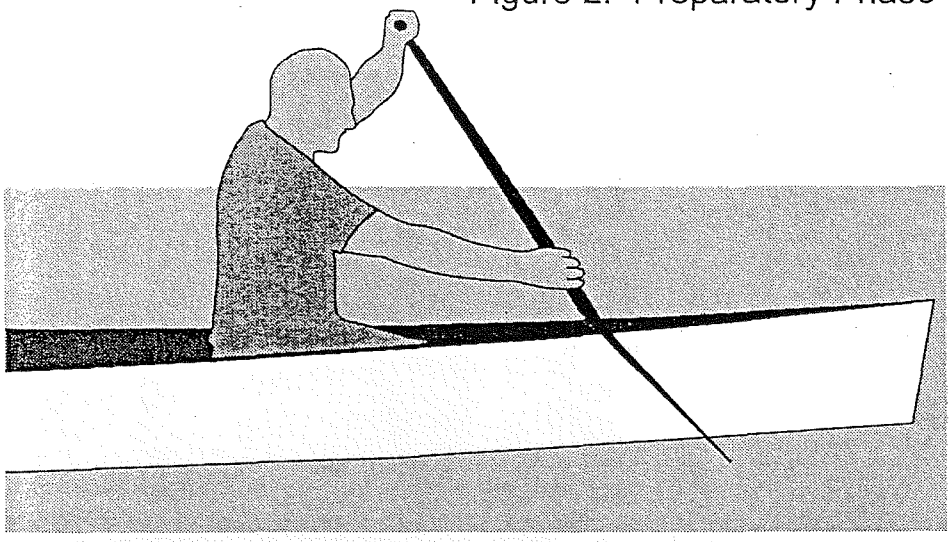
and increases our walking efficiency. Therefore, the faster our pace, the more critical it is to walk flat-footed and shorten our stride. Under normal walking conditions, we push off with the ball of our foot and take a lengthy stride. As we well know on a slippery surface, this increases our chance of slipping and even falling. Slipping usually occurs at the beginning or end of our stride. Why? Because at this moment we are either landing on our heel or pushing off with the ball of our foot. Obviously, the ball or heel provides very little surface friction as compared to the entire sole.

When we experience a sense of slipping, we instinctively adjust to a flatter foot and shorter stride. Our ability to sense even the slightest slippage followed with an immediate adjustment to a flat-footed, shorter stride is what makes us efficient walkers on slippery surfaces. Water is similar to a slippery walking surface, and the paddle blade is like the sole of a person's foot. As in walking, the more blade surface contacting "still water" the better. To become proficient paddlers, we must develop a sense of two things. The first is a refined sense for recognizing when the paddle is slipping. The second is an instinctive knowledge of how to adjust the stroke to reduce slippage.

A good preparatory position is vital in minimizing slippage and increasing stroke efficiency. During the Preparatory Position (or beginning point), the blade tip is beginning its entry into the water (see Figure 2). In this moment your lower arm (arm grasping the throat of the paddle) is fully extended (at 3:30 or 4 o'clock). It's similar to reaching for a doorknob. At the same time your top arm (arm grasping the top of the paddle) is at shoulder level (at 2:30 or 3 o'clock) with the elbow slightly flexed. As you begin exertion, you sense a pulling rearward with the lower arm and pressing downward with the top arm.

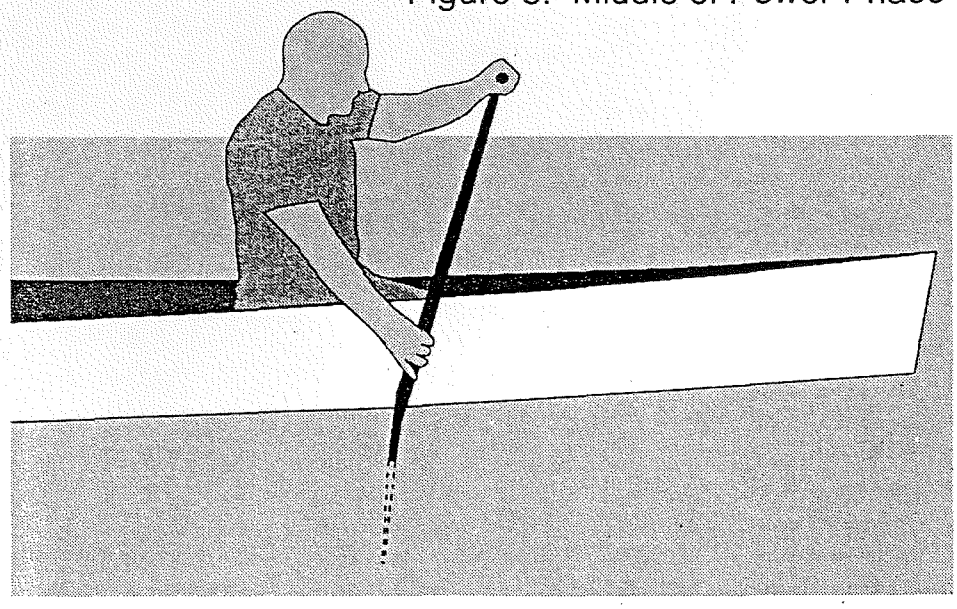
During this propulsion (or power phase) of the stroke, there needs to be forces exerted by both the lower and top arm (see Figure 3). The relationship of force between the two arms is of critical importance in achieving good stroke efficiency. The top arm presses down and across the body slightly while the lower arm is pulling rearward. If the top arm presses too lightly and/or the lower arm pulls too heavily, there will be an increase in paddle slippage. In our walking analogy, it would be equivalent to walking on the balls of your feet when you should be walking flat-footed. What about the reverse – excessive downward pressure by the top arm with minimal pull from the lower arm? This avoids slippage, but doesn't provide sufficient forward propulsion. Finding the right

Figure 2: Preparatory Phase



degree of force that each arm is to exert is critical and is acquired through a sense of feel. Also remember during the power phase of the stroke, both arms move in a downward arc like the arms on a clock. There is minimal flexion at the elbows and this full-arm lever allows you to use more of your shoulders, chest and back muscles. Why is this important? These torso muscles are not only stronger than your arms, but they have significantly more endurance.

Figure 3: Middle of Power Phase

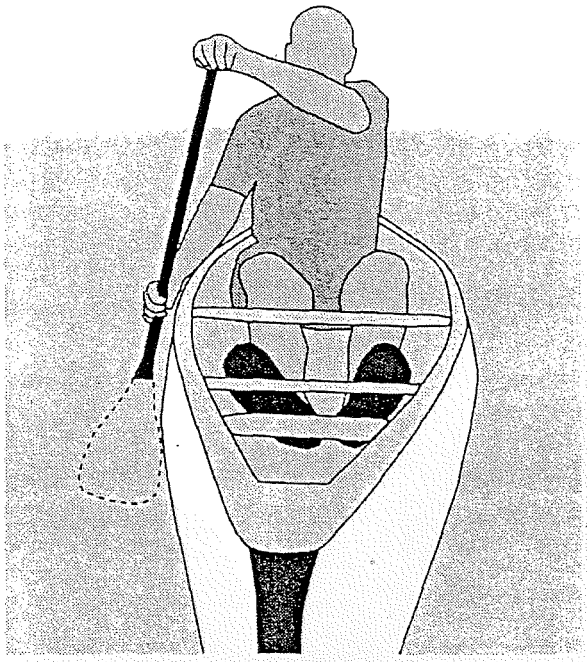


To develop this sense of feel, you must first develop a keen sense of slippage. When is the paddling slipping? How much is it slipping? Or, what does it feel like when there is little or no slippage? The inexperienced paddler cannot easily detect slippage, but there are a couple of exercises that can help. Have your partner stand in the water, holding the canoe in place while you take a series of hard strokes. As you stroke, observe the water in front of the paddle. A swirling hole forms and a sucking noise is heard if you are pulling hard enough. This is slippage at its extreme. The canoe remains stationary and the water is being pushed rearward. As you are stroking, pay attention to how it feels in the muscles doing the work. Once you have a good sense of how it feels, try changing the amount of pressure exerted by each arm. Remember to start with a good preparatory position with each stroke. Exert more pressure with the top arm. See how it feels. Next, exert more pressure with the lower arm. Each of these is a different stroke variation. The question now is which one is more efficient. Some stroke variations will feel as though they require much less effort. If you jerk instead of pull on the paddle, it feels even easier. This again is slippage

at its extreme. The stroke variation that feels the hardest is the more efficient stroke. In fact, a really efficient stroke feels as though the water has suddenly changed to thick wet cement making it extremely difficult to move the paddle rearward. Only small changes in arm pressure will bring this change about. It takes a few weeks of practice to develop this instinctive feel.

Another exercise in the off-season is to sit on the edge of a pool and paddle. This works on the same principle as the stationary canoe. Both help you in developing a keen sense of blade slippage. Detecting slippage in a moving canoe is harder, especially with a paddling partner. In a moving canoe slippage is quite subtle. But, you can improve detection by taking hard, firm strokes. Strive for the wet cement feel and note the corresponding increase in canoe speed. Eventually, you will detect slippage as well in a moving canoe as you do in a stationary canoe. Paddling solo on occasion is also helpful. It allows you to feel changes in the canoe's speed as you try different stroke variations without the influence of your partner's stroke.

Figure 4: Correct Shaft Angle



Stroke length and keeping the stroke in front of you are important as well. Strokes that continue back past your hip will increase slippage. The principle is similar to taking long walking strides on a slippery surface. The friction between your foot and the surface is reduced as you push off with the ball of your foot. With the paddle, less friction occurs because once past the hip, the blade is out of the perpendicular range. It is better to keep the stroke out in front of you, reaching fully with the lower arm as you begin the stroke.

It is important that the paddle shaft remain fairly vertical during the stroke (see Figure 4). If you watch inexperienced paddlers, you will notice the shaft is angled across their body (see Figure 5). Watch what happens to the paddle blade during their stroke. It actually makes a slight sweeping motion out away from the canoe instead of straight rearward. Unfortunately, any sweeping motion reduces the amount of forward propulsion.

When you are experimenting with different stroke variations, be careful how many things you change in your stroke. It is better to make one change and not several changes simultaneously. Making multiple changes makes it difficult to know which change improved the stroke. For example, apply more pressure with the top arm, but do not change the lower arm. This way you will know what contributed to the change.

In conclusion, developing the feel for good stroke efficiency has its moments of frustration interspersed among moments of elation. The elation comes with each little improvement. Like a child learning to walk, there will be, in the beginning, brief moments where everything seems to be coming together, but a moment later you will have lost it again. You will feel solid for a few strokes and then it is gone again. Be patient. Day by day the moments when it seems to be coming together will soon begin to outnumber the moments when you have lost it again. Finally, the technique will become so automatic, you will not need to consciously think about it. You will instinctively do it without thought. At this point you feel as though the canoe is simply an extension of your body, just like your legs in walking. It is then that Mother Nature can throw harsh winds or strong currents at you, and it will be no more difficult than walking. ❑

Figure 5: Incorrect Shaft Angle