

Cadence

Begin paddling forwards, side by side, one to two boat lengths apart. Once the boats are moving at a relaxed cruising speed, paddler #1 will continue at a normal cadence. Paddler #2 will now only take a stroke when paddler #1's blade enters the water on the left. The effect is that paddler #2 will execute half as many strokes as paddler #1. It may take a few cycles to get the feel since there is a pronounced and somewhat unnatural delay between strokes for paddler #2. Continue along for two to three hundred yards and note what separation (if any) has developed between the two boats. Repeat the process with paddler #2 maintaining normal cadence and paddler #1 skipping a beat.

What most paddlers find

After two to three hundred yards, teams are usually within a boat length or two of each other. One paddler got there with half as many strokes!

Lessons to learn

There are two primary factors involved with this outcome. The first is the ability of sea kayaks to glide. If you try this experiment with general recreation or old-school whitewater boats you'll likely get very different results. We tend to not let our boats glide, not realizing that it is possible to lower our cadence without sacrificing speed. By artificially breaking the cadence, the paddler will focus on each individual forward stroke, making each one more powerful and effective. Consider the physics of the problem: if the two paddlers get to the same location at the same time, then they both exert the same overall force with their paddles. But the paddler using half the strokes must be exerting twice as much force per stroke as the other. She is certainly executing a more powerful stroke than her counterpart using twice the cadence. If she can then take that more powerful stroke and begin to increase her cadence, then she will be going even faster and more efficiently.

Further experimentation

What happens when paddler #1 slows their cadence? What happens when paddler #1 increases their cadence, first to a fast cruising speed, and then to a sprint?

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Hand Grip

Bring the boats up to a relaxed cruising speed. Both paddlers will maintain this cadence. Paddler #2 will change their grip on the paddle so that only the thumb and 1st or 2nd fingers of each hand are holding the shaft (like making the O.K. sign). Both paddlers continue for one to two hundred yards and note what separation, if any develops. A variation is to use only the fingers of the lower hand while the upper hand cradles the shaft against the web of skin between the thumb and index finger.

What most paddlers find

Most teams stay together over the distance. One paddler did it with much less energy expended to hold the paddle.

Lessons to learn

We generally grip the shaft more tightly than is necessary for control. A tighter grip shortens your reach, fatigues your hands and arms faster, reduces circulation, and may contribute to repetitive stress injuries. You may need a more aggressive grip on the shaft if you're fighting 20 knot winds, but even then you'll still benefit from the most relaxed grip the conditions will allow.

Further experimentation

Get the boat up to cruising speed. With one hand hold the paddle with the "Cobra Death Grip". With the other hand, hold the shaft with a very relaxed grip. Does the boat turn away from the "death grip" side or the relaxed grip side? Which grip allows the blade to enter further forward?

When the blade enters the water at the beginning of a forward stroke, hold the shaft with just the thumb and one finger. As you begin to apply force to the blade, add fingers one at a time until you've got a firm grip on the shaft. Do you feel any loss of control?

For the next experiment you don't need a boat; just a paddle shaft or broomstick will do. With one hand, grip the shaft and squeeze moderately hard. Maintain that constant pressure. With the other hand squeeze the shaft firmly for two seconds then open the hand for three seconds. Squeeze for two seconds, open for three seconds. Repeat this sequence for a period of 2 minutes. How do your forearms feel? Is there any change in your grip strength? How do you think it would feel after two hours? How would your circulation be affected?

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Foot Focus

With the boats at cruising speed, paddler #1 makes a conscious effort not to push on the footbraces (or move your feet completely off the pedals) while paddler #2 pushes forcefully on alternating footpegs. After two to three hundred yards, switch. How much effect did pushing with the feet have? (If you have a ruddered boat, lock the blade to allow for the firmest footpegs you can achieve.)

What most paddlers find

The pushing paddler moves ahead of the non-pushing paddler.

Lessons to learn

Our goal is to transfer the force applied to the blade into the boat. The most direct route for that force transfer is through our bone structure into the footpegs. When you don't push on the footpegs, your butt tends to twist in the seat, your lower back gets torqued, and energy is lost to the twisting that would otherwise go into propelling the boat forward.

Further experimentation

- Sit on a bench, in your normal paddling position, and have a partner hold your blade at a right angle to you. Now apply force to your blade (as in sweeping) and note how much energy you can exert against the blade before your lower body twists away from the blade. Next move the bench against a wall and push your feet against the wall while sitting in your normal paddling position, again have your partner hold your blade and compare how much more force you can exert compared with not pushing with your feet. You can quantify the difference by holding a bathroom scale between the blade and your helper's hands, so that the helper can read the scale as you push against it. There is some potential for injury with all that pushing going on, so be careful of your helper – and be sure the helper is careful not to let the blade slip.
- With the boats at cruising speed, push only on one footpeg; left foot pushes, right doesn't push at all. Does the boat turn? If so, in what direction?
- Straighten your legs and drop them to the hull of the boat while maintaining alternating foot pressure on the pegs. How does this affect your forward speed? How does it affect your ability to edge the kayak?
- Next, let the knee of your non-pushing side "pop up" so your legs will be "bicycling". Is this more or less effective than keeping your legs flat on the hull?
- Move the footbraces one or two notches closer than normal. Then try it one or two notches further away, and repeat the above experiments. How do the different footbrace positions affect your ability to rotate, apply power, and edge the boat?

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Blade Placement

Paddler #1 does their normal cruising forward stroke; paddler #2 will focus on completely submerging the blade before applying any force to it. You can get the blade completely submerged either by dropping the on-side shoulder or by stabbing the blade into the water like spearing a fish or gigging a frog. The key is to not pull back on the blade until the whole thing is in the water. Again, switch with your partner. What effect did the fully submerged blade have on the boat's speed?

What most paddlers find

The submerged blade paddler moves ahead of their partner.

Lessons to learn

A partially submerged blade only provides partial power. To get the most from each stroke make sure the blade is fully submerged prior to applying force.

Further experimentation

Instead of placing the blade near your toes, intentionally shorten the stroke so the blade enters at your knee. How does this affect your speed? How does it effect your rotation? Did you have a greater tendency to use arm muscles?

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Sightless Paddling

Get the boat up to cruising speed, running straight. Close your eyes and try to continue paddling straight. Have a partner act as your eyes to keep you from paddling into some immovable object, or being run over by a very moveable object. Have your partner call “Stop” if you move more than 90 degrees off course. Does the boat veer to one side? Repeat the process several times; if the boat consistently veers to the same side, try to figure out why. There should be symmetry between sides in the following areas: how hard you pull, blade entry position, blade exit position, how far from the side of the boat the blade travels, foot pressure, grip on the shaft, degree of edge(no edge/wobble is desirable).

What most paddlers find

Everybody veers. The most symmetric paddlers will veer randomly, sometimes left, sometimes right. It’s due, in part, to the fact that once a kayak starts to turn a little bit, it wants to turn more and more. Newer paddlers will make more macro-corrections to stay on course. As experience increases we begin making more micro-corrections.

Lessons to learn

Identifying asymmetry in your stroke, and reducing it, will increase your efficiency and reduce fatigue levels. There’s no shortcut to moving from macro-corrections to micro-corrections other than “boat time”. In order for a micro-correction to be effective, it must be applied at the instant it is needed. If a paddler needs to take the time to process the thought of “Oh, I’m veering off course, I need to add a correction into my forward stroke” — then it’s too late: now you’ll need a macro-correction. Micro-corrections are those that would be barely perceptible to someone watching you paddle; such as exerting slightly more force on one side, slightly widening the stroke on one side, adding a bit of edge. Someone watching a macro-correction would see an obvious change to the forward stroke, perhaps a sweep, rudder or multiple forward strokes on the same side.

Further experimentation

- Use your ears. As you paddle forward with your eyes closed, listen carefully to the sound your blade makes as it enters the water, as it moves through the water and as it exits the water. Is there symmetry to the sound? Is there more splashing on one side compared to the other?
- Intentionally cause the boat to veer and listen to the sound coming off the stern of the boat. Cause the boat to veer left, then repeat to the right and listen. Paddle forward again with eyes closed and see if you can tell from the sound which way the boat begins to veer.
- Because those micro-corrections occur subconsciously, some paddlers find it helpful to distract the conscious mind from staying too focused on steering the boat. Try singing to yourself or reciting a poem and see if the number of macro-corrections decreases.

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