



Level 3-5: River Canoeing

“2 X 4 Method”

Instructor/Trainer Guide

Solo Canoe 2 X 4 Method

Overview: The following material addresses the specific needs of paddling “sub-10” and all solo canoes without the loss of forward momentum.

As solo whitewater canoes have shrunk in length and hull designs have become more advanced, canoe instructors have to break away from the fixed-mindset that solo canoes can and should be paddled in the exact same fashion as tandem canoes. While ‘corrective’ strokes behind the paddler’s hips can still be effective, with ‘shorter’ canoes these strokes can also dramatically slow the momentum of the canoe. Therefore, ‘driving’ and controlling the canoe from the in-front of the hips position while using a bow wave should be emphasized for shorter and more aggressive solo-whitewater canoes.

Controlling and steering from the front of the canoe can be performed with various techniques and approaches. The concept and utilization of the 2 x 4 method is outlined below.

The 2 X 4 concept describes how two strokes with four stroke elements can be used in conjunction with stroke cadence (speed), paddle angle and position, and tilt to control the path of the solo canoe while minimizing the need for momentum-robbing correction strokes.

<p><u>2 Strokes:</u></p> <ul style="list-style-type: none">• The forward stroke• The cross forward stroke	<p><u>4 Elements:</u></p> <ul style="list-style-type: none">• Cadence• Angle• Position• Tilt
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Bow Wave

The forward momentum of a canoe forms a bow wave. If all forward forces are equal and the hull is flat, the wave formed is identical on both sides of the bow. When the pressure is reduced on one side of the bow, by changing the heel or tilt of the canoe, an asymmetric, larger wave is formed on the outside. The canoe will then turn away from the larger wave. When an equal or greater force is exerted on the opposite side, the canoe will move forward in a controlled arc. The arcing path is then controlled by the 4 stroke variables of cadence, position, angle, and tilt. The canoeist controls the bow wave by varying the forces of the forward stroke and tilt of the canoe.



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The forward and cross-forward stroke is used to move the canoe forward in an arc using the bow wave. We must recognize that forward momentum is produced by a forward stroke with a range of cadence, angle, position and boat tilt. Use any combination of the elements to maneuver the canoe, given the hull design (mass) and the net forces acting on the canoe. Use the acronym **CAPT** to remember the four elements of 2 X 4:

1. **Cadence:** Slowing the cadence will tighten the turn. Increasing the cadence will straighten the arc.
2. **Angle:** A vertical shaft with hands stacked over the water will tighten the turn. If the shaft is inclined over the canoe the forward stroke straightens the arc or switches the arc.
3. **Position:** Position of the stroke is in front of the knee, to tighten the turn. A forward stroke to the hip will straighten the arc.
4. **Tilt:** The greater the tilt the tighter the turn. Flattening the hull straightens the tracking or switches the arc.

Flat Water Drills

Carving Circles

Carve a continuous arc using the 2 X 4 method.

- Begin paddling forward with a single stroke on the side you want to carve an arc.
- Followed by 2 strokes on the opposite side, to establish momentum
- Cross back to your first side, momentary pause as you switch back, tilt and begin paddling using the 4 variables of the forward stroke to control the arc.
- Start with a small circle and gradually increase the diameter of the circle to an arc that resembles a straight path

Figure 8

Performing the figure 8 flatwater drill using the 2X4 method helps develop effective carving and switching between onside and offside arcs.

Tip: Use 4 weighted buoys to mark the course; the distance between markers should be a minimum of 3-4 boat lengths.

Switching Arcs

- To prepare to switch from a carve in one direction to a carve in another direction, Speed up your strokes—or—Angle your shaft more—or—Lengthen your stroke to begin to straighten your carve.
- Plant for a forward stroke but with the shaft angled like a sweep or a cross forward sweep.
- Look in the direction that the new carve will be in as you power your sweep stroke.
- Your sweep will help you level your canoe.



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- Pause in your stroke cadence as you cross over to paddle the inside of your new arc.

Carving a square

Initiate forward momentum using a quick start with a stroke on one side, then crossing to the other for two or more strokes to add some spin momentum.

- Once you cross back to your first side, establish a tilt toward that side.
- While carving, speed up your strokes for the “straightway” parts of the square and slow them down to “turn the corner”.

Also use these alternate paddle variables to carve the square.

- Use a vertical shaft on your forward strokes to “turn the corner” and a more angled shaft with the blade away from the canoe for the “straightway”.
- Use longer strokes for the straight-aways and shorter strokes to turn the corner.

Moving Water/Whitewater Maneuvers

Performing the following maneuvers in appropriate venues using the 2 X 4 method for carving to enter the wave trough. Use carving and wave troughs to enter the current and exit the current.

- Peel-outs
- Eddy Turns
- C-Turns
- S-Turns

Additional Resources

- “2X4 Technique” by Andrew Westwood, www.westwoodoutdoors.ca
- Using “2X4” Technique. <https://www.youtube.com/watch?v=7huV-ivbGAs>
- Solo Whitewater Canoeing with Tom Foster:
<https://www.americancanoe.org/store/ViewProduct.aspx?ID=715710>