WBC Learn to Scull Class Syllabus 2022

LTS Session 1 (Intro to Rowing Technique using ergometers)

Class Introduction, rowing background of participants, instructor

- Review of iCrew registration requirements:
  - Emergency Data available
  - Joined LTS team
  - Signed waiver and swim verification form
  - Submitted payment

- Overview of this class:
  - First 4 sessions held on land
  - Next 6 sessions held on water
    - Plan the flip test on the third water session, in 3 weeks
  - Makeup sessions are scheduled for the last weekend.
  - Individual makeup sessions during the weekdays are possible if needed

- 2 types of rowing, sweep and scull
  - Sweep rowers use one oar about 30% larger than a sculling oar
    - Some sweep boats use a coxswain to navigate the boat and coach
      - In coxed boats, rowers just row
      - In uncoxed boats, the person sitting in the bow position of the boat is responsible to navigate

- Single sculling is the most challenging form of rowing: The rower:

  Is the "engine" to propel the boat,
  Navigates the desire course while looking away from where the boat is headed. This includes staying on the correct side of the waterway, turning the boat in both large and small diameter turns as needed, avoid obstacles (weeds, logs, other boats), adjusting the heading of the boat to correct for the effects of wind and tide on the boat.

- So we'll begin by learning the proper way to row, i.e., proper rowing technique. This same technique is used by world champions and purely recreational rowers who row solely for their pleasure.

Adult Learning Theory

Children experience new tasks much more often than adults, so they learn differently than adults. A typical 9th grader will become comfortable sculling in a few sessions; adults are not nearly as quick to learn new skills.

Adults learn by learning the differences between a new task and a similar task they are familiar with. The older we get, the more experience we tend to get, so this re-

enforces the validity of us learning only the differences between tasks, as we know the other stuff.

Rowing requires specific parts of the body to move in a particular sequence that is not natural at all. And we face backwards while rowing ahead, the left side of the boat is to the rower's right. Almost everything in rowing is reversed from our non-rowing experiences.

So if you expect you will to learn to scull properly very quickly, this will be an extremely frustrating and difficult class. But realize the downfalls of how adults learn, and that no one is born knowing how to row, so try not to get too frustrated at your mistakes. You will learn skills that are completely new to you, as we have nothing in our "been there, done that" bag of tricks to compare rowing.

Intro to the Concept 2 ergometer

Adjust damper setting someplace between 2-4 as desired. This damper setting has nothing to do with resistance while pulling the handle, it slows the wheel down quicker at a "10" than a "1". In other words, the damper setting is an artificial feel device, 10 feels like you're rowing a barge as the wheel slows quickly after each stroke, and "1" feels like you're skating on ice, as the wheel takes a long time to slow down.

Adjust the heel cups so that your shins are vertical at the catch position. For most people, this is approximated by having the foot straps cross the widest part of your foot, typically around the shoelace eyes closest to the toes.

The performance monitor has many functions and we'll play with that in the next 2 days so you can get a feel for the different functions and displays which provide feedback to the rower.

The numbers displayed will likely change for each stroke. The displayed number is a constant moving average of your last 2 strokes. So when you take one stroke, there is no information displayed until your second stroke is complete, then you get the average of the first and second strokes.

Adjust the ergometer for you:

Adjust the heel cup,

Adjust the damper setting,

Sit on the machine with your hips tilted back slightly so you feel like you are sitting at the top of the hamstrings, rather than the tailbone. You should feel your "sits" bones in contact with the seat. Stay upright, but not rigid, so the lower back is supported. During a proper stroke, the chain connected to the handle should move horizontally with very little bounce up or down.

The grip, or grasp, should be loose and comfortable. Grasp the handle in a wide grip, with wrists flat. Don't squeeze the handle, just grasp it. The knuckles you use to knock on a door should be pointed toward the horizon while on the drive portion of the rowing stroke.

The Rowing Stroke:

The rowing stroke is a continuous cycle of movement, but is often divided into four major sections. As this is a cycle of continuous movement, there really isn't a start to the cycle. But we will arbitrarily start our description of the rowing stroke with the "**catch**", which is when the oar enters the water. Next comes the "**drive**", during which the legs, then the back and then arms (in that order) are used to drive the oar through the water (or pull boat past the oar, whichever description you prefer). After the drive, the "**finish**" is the movement that extracts the oar from the water, and the "**recovery**" is the movement of the arms, back and lastly the legs as the rower smoothly rests and slides up the slide to the next **catch**.

Ratio or Rhythm: Timing is a critical to proper and effective rowing, especially in team boats. This might be why sweep rowing is referred to as "crew" in college and high school. For every unit of time spent on the drive, the rower spends roughly 2 units of time on the recovery. We will start rowing around 20 strokes per minute, which means each complete stroke cycle will take about 3 seconds. So we'll try to spend about one second on the drive and two seconds on the recovery. This ratio gets smaller as the rating goes up, but drive should always be faster than recovery. So rowers should spend more time on the recovery (resting) than on the drive (working).

Proper rowing form is evident by a smooth power application during the drive portion of the stroke, and a smooth, unrushed recovery. "Rushing" generally occurs when the rower moves their body parts out of sequence. The body parts moved during the drive are "legs, back, arms" in that order, and the recovery is the opposite, i.e., "arms, back legs". You will hear the coach repeat this mantra several times as you learn to row.

Instructor demonstrates rowing technique at around 20 spm. "Catch, finish, 3, 4, catch, finish, 3, 4, etc." On the count of 3, the rowers should have their arms comfortably outstretched and a line connecting their hip to shoulder should be at around the 1 o'clock position on an analog clock.

Instructor demonstrates the pick drill.

Set 1: It is important to learn proper rowing technique, so this is not a workout, but rather a "muscle memory" exercise. Take it easy and don't exert yourself. Set up the performance monitor for 3 minute intervals with 1 minute rest.

3 minutes at 20 spm at a comfortable pace, 1 minute rest
3 minutes at 20 spm at a comfortable pace, 1 minutes rest

3 minutes at 20 spm at a comfortable pace.

The coach will come around during these pieces and make technique corrections as needed. Focus on proper rowing technique, not power.

Set 2: This introduces the rower to varying the rating while rowing. This should be at a "conversational" level of effort. "Conversational" means you should be able to carry on a conversation while rowing during this entire set, so take it easy and focus on proper technique and capturing and maintaining the desired rating. Set up the performance monitor for a single time of 5 minutes:

1 minute at 18 spm, then
1 minute at 20 spm, then
1 minute at 22 spm, then
1 minute at 20 spm, then
1 minute at 18 spm.

Set 3: This set again focuses on changing the ratings while maintaining proper rowing technique. Do this at an easy, conversational level of effort. Set up a single 7 minute time on the performance monitor.

1 minute @ 16 spm
1 minute @ 18 spm
1 minute @ 20 spm
1 minute @ 22 spm
1 minute @ 20 spm
1 minute @ 18 spm
1 minute @ 16 spm

5 minute break

Set 4: Set up the performance monitor for 3 minute intervals with 1 minute rest.

The goal of these intervals is to get a feel how a rower adjusts the ratio (or rhythm) to maintain the same rating at different power. The more power applied, the quicker the drive portion of the stroke. But to maintain the same rating with more power, more time has to be spent on the recovery.

First interval: 3 minutes at 20 spm at an easy, "conversational" effort. Maintain a constant split (easy effort) and a constant rating of 20 spm for this piece. Then rest for 1 minute before the second interval.

Second interval: 3 minutes at 20 spm, slightly harder effort; 1 min rest. Maintain the same rating as the last piece, but this time put in a bit more effort. Try to reduce your split time by about 10-15 seconds. For example, if you rowed a 3:00 split for the first interval, row around 2:50 or 2:45 for this 3 minute piece. Try to maintain a

constant split and constant rating. Don't over exert yourself, the goal is to maintain proper rowing form and get a feel for how you can adjust the power while maintaining the same rating.

Third interval:

1 minute at 20 spm at the same easy, conversational split as the first interval,
1 minute at 20 spm at same faster split of the second interval, then
1 minute at 20 spm at the same easy, conversational split as the first interval.

Set 5: Set up the performance monitor for 3 minute intervals with 1 minute rest.

The goal of this set of intervals is to get a feel how to adjust rating while maintaining a relatively constant power.

First interval: 3 minutes at 20 spm at the same easy, conversational split as the first interval of the first set. Rest for 1 minute.

Second interval: 3 minutes at 18 spm, at the same easy, conversational split as the first interval of the first set. Rest for 1 minute.

Third interval:

1 minute at 20 spm at the same easy, conversational split as the first interval,
1 minute at 18 spm at same faster split of the second interval, then
1 minute at 20 spm at the same easy, conversational split as the first interval.

Set 6: Set a single time of 10 minutes.

Ergs are placed so rowers are set as if in 2X, with one rower being the "stroke" and the other (the "bow") directly behind the "stroke". The "stroke" will set the rating for the piece, and the "bow" will follow. Stroke will maintain a conversational level of effort at a rating between 18-22. The bow should follow so the two rowers catch, finish and recover at the same time. The coach may elect to play the role of the coxswain, and call out when to increase the rating during this piece.

Optional Set 7, reverse the bow and stroke seats for another 10 minute piece.

Leaving the ergometer:

Wipe down the handle, rail and seat. Do not use bleach solution on the rail.
Place the handle in the fully retracted position against the flywheel, not the grip holder. This helps keep stress off the internal bungee cord which makes it last longer.

Learn to Scull 2021 Session 3 Lecture:

At the Boathouse:

Maintain social distancing
Spread scullers outdoors around the picnic tables outside the boathouse

Introductions:

Names, rowing backgrounds of coaches and participants
Complete all administrative details, as needed

Class Overview:

WBC sculling guidance
Rowing Terms
Basic Maritime Rules of the Road
Weather and Tides
Applied Hydrodynamics

I. WBC Members Handbook (download from WBC website documents pages if desired)

WBC Sculling levels of certification:

Level 1: Rec single, demonstrate basic sculling technique and capabilities
Level 2: Racing single, more proficient, demonstrate advanced techniques and capabilities
Level 3: Sculling instructor

Sculling Level 1 Limitations: (when using the club's equipment)

Row in a recreational 1X
Row in a 2X with Level 2 or better sculler
Cannot row in a racing 1X until more proficient
Cannot row except at scheduled sessions (Covid restrictions)

Do not take out a private boat unless the owner has given you specific permission. Level 1 scullers may reserve recreational singles on iCrew. With about 100K of sculling experience (~15 hours), Level 1 scullers may request to use a racing single at coached sessions to gain the experience needed to attain Level 2.

Required equipment in each row boat: (Virginia Dept of Wildlife Resources)
1 PFD per rower
1 whistle, bell or horn

(The above will also be in the safety launch during scheduled rowing sessions, but get in the habit of bringing a whistle and PFD with you)

Recommended equipment:

Cell phone in waterproof container
~1 quart/liter of fluid for each hour anticipated on the water
Hat, sunglasses, sunblock, compression shorts/yoga pants (no loose or baggy shorts or they will get caught in the wheels of the seat), socks, high visibility colored jersey, additional layers suitable for expected temperatures.

Incident reporting

Club members are not expected to pay for any damage caused to club's equipment, unless it was intentional.
Contact any coach to report any personal injury or equipment you notice is damaged or missing parts (e.g, a bowball).

Procedures in the handbook:

Swamping, Capsizing, Breakup of Sinking
Running aground or hitting a submerged object
Heat related emergencies
Hypothermia
Emergency Landing areas

Appendices in the handbook:

Swamped shell recovery

II. Rowing Terms:

Parts of the oar:
Parts of the boat:
Types of shells: 1X, 2X, 2-, 2+, 4-, 4+, 4X, 8+
Numeral = boat's capacity of rowers
X = sculling shell, 2 oars per person
- = No coxswain capacity
+ = Coxswain capacity
Rowing Commands:

III. Traffic patterns and basic maritime safety rules:

We share the water with many other boaters: bass boats, ski boats, SUP, kayaks, yachts. Expect very few of the operators of these vessels to be licensed or even know, let alone abide by, even the basic maritime rules of the road.

Take the Boat US Boating Safety online course (it's free) if you haven't already done that to be a more enlightened boater.

Like driving on the roads, all boats are to favor the right side of the waterway as the bow is pointed (the shore should be closer to the rowers left side).

Rowers are encouraged to navigate and maintain a course about halfway between the center of the waterway and the shore, or about a quarter of the width of the waterway from the nearest shore. Try to stay at least 25 feet away (or about a boat length) from the nearest shore, as there are many "deadheads" along the banks of local creeks and rivers. Deadheads are partially submerged logs that may or may not be lodged in the mud.

"Minimum 4 oars on the water" is the fundamental rule for using the club's sculling equipment. Four oars must be on the water (like diving, the buddy system is required when using the club's equipment). Recommended, but not required, if using your own scull and oars.

Maritime rules of the road require all vessels to yield the right of way to any other vessel that is more restricted (more restricted means less maneuverable) than them. For example, while a racing 8 is very limited in maneuverability (turn diameter of about 200 meters), if there was a tug and tow moving in the river channel, that much larger vessel is considered more restricted as it can't safely maneuver outside the channel. A vessel at anchor or drifting is considered more restricted than a rowing shell underway; lots of bass fisherman drift or anchor or use a small trolling motor, in the creeks.

When two vessels are approaching the same point on the water (i.e., the other boat is maintaining a constant bearing from you, but the range from you is decreasing), the one on the right (when looking towards the bow from both boats) has the right of way. The one of the right should continue their course and speed, while the other should slow or turn to avoid a collision.

Many boaters don't know they are responsible for damage caused by their boats wake, nor recognize how low the freeboard is on our shells. Bottom line: Expect no one to give you the right of way. If you're not looking around a lot, the first indication of a nearby boat may be the sound of that boat's engine.

IV. Weather and Tides:

If you hear thunder, get off the water as soon as practical (turn back to the dock)

If you seen lightning, get off the water immediately (the nearest suitable landing spot where you can dock and get shelter).

Don't row in less than 1/4 mile visibility (most fog forms during March and October mornings locally)

90° F rule: If the water temperature and air temp added together is less than 90F, don't row. If rowing by yourself, consider upping this to 100° F, as the 90F rule assumes there is a hypothermia response nearby (the coach's launch).

Be aware of hypothermia in cold weather conditions.

Be aware of hyperthermia and heat stroke in hot weather conditions.

Rowers are not to row in water with whitecaps. Whitecaps form at around 13 knots of wind. But rowers may row in a protected waters (in a lee) where there is less wind and no whitecaps. Do not row when small craft of higher wind warnings have been posted (>20 knots of wind), as a scull is one of the smallest crafts on the water.

Tidal Considerations

Check the tide charts for "Ferry Point Bridge" prior to rowing.

The tidal cycle approximates a sine wave, but the peaks do vary (literally with the phase of the moon and other local influences).

The tidal cycle varies, but there are roughly 2 high and 2 low tides every 25 hours.

Ebb tide means the water is flowing out from the creeks and river toward the James River.

Flood tide means the water is flowing into the creeks and river.

Tidal current is insignificant at slack water, roughly 30-45 minutes prior to and after high or low tide.

The tidal current is maximum when the slope of the tidal curve is a straight line.

The slope of the straight portion of the tidal curve indicates the relative strength of the predicted tide current, the steeper the slope, the faster the water will flow. As an aside, the tide moves the entire water column, from surface to bottom, not just the surface.

Affects of combined wind and tidal currents:

If the tide is moving in the same direction as the wind (less than 13 knots of wind), there is little affect of the wind on the water.

If the wind is blowing opposite to the direction of the tide, expect very short, choppy wavelets to form on the water surface. Whitecaps may form in less that 13 knots of wind in this situation.

"Fetch" is a term that describes the distance the wind blows without being obstructed. The longer the fetch, the more wind-driven waves form. The stronger the wind and greater the fetch, the greater the wind driven wave height. As the Chickahominy here runs essentially north-south, if the wind is from the south and the tides are ebbing, it will be very choppy on the river. The south bank of the James is

roughly 2 miles south of the Chickahominy, so the wind-driven waves have miles to build and then collide with the southward flowing water in the river.

Bottom line: Check the weather forecast (to include wind speed, direction, any inclement conditions) and tide tables so you can anticipate the water conditions and plan a safe rowing route accordingly.

Local obstacles

Using the chartlet of the local rowing area, point out:

Local boat ramps and docks for emergency water egress

Known obstacles (e.g., trees, sunken logs, duck blinds, buoys)

Tide rips (eddies that form with the tidal current that may affect the boat's movements and feel on the oars). Essentially any turn with a ~90° or greater bend in the channel when the tide is flooding or ebbing.

V. Applied Hydrodynamics: (how to control a boat)

The key word is "dynamics". The boat must be moving through the water in order to be controlled. But the **movement is relative to the water, not the shore**. You can drift with the tide with no propulsion, and still be moving about 2 mph at the max current. But you have no control of the boat.

Every boat, from a scull to an aircraft carrier, really does move opposite to the direction of people moving on the boat, be it moving forward or aft, or left to right. These are all equal and opposite actions and reactions. More massive vessels (aircraft carrier) will move less than less massive vessels (scull), but all vessels react to movements on or in them.

The boat and the rower are a system, and the boat will move by itself to maintain the system center of gravity as the rower moves. Demonstrated on the next day.

The rower maintains a straight course by keeping equal pressure on both oars and both feet throughout the drive.

"Connection" is a rowing term and refers the system connection between the boat, oars, water and rower. When each part of this system is connected, it means the rower is attached to the boat and oars, the oars are attached to the rower, water and boat, and the boat is attached to the rower, oars and water.

The rower has no control over the boat when the connection between the boat, water and rower is lost (i.e., during the recovery phase of every rowing stroke).

The water and wind moves the boat at all times, regardless of connection.

A controlled turn is made by intentional differential pressure on feet and/or oars (or a differential in oar arcs). An uncontrolled turn is made by unintentional differential pressure on feet and/or oars.

A tighter turn can be made by applying maximum pressure right after the catch (initial force pushes the bow to the other side)

The tightest turn possible is by spinning the boat while stopped, as it will pivot around the center of gravity of the boat/rower system. One oar moves backwards ("backing") and the other oar rows normally.

Navigation:

Unlike sweep rowing, the sculler in a single is also the coxswain, and is responsible to navigate the boat to avoid obstacles and obstructions while rowing and safely return to the dock.

Basic steering and turning techniques:

The most efficient course to steer while sculling is to steer a straight course to the next turn point. But the current and wind will also affect the direction the boat actually tracks across the water.

"Check your point" often, which means turn and look (or buy a mirror) so you can verify you are headed toward your next turn point.

Look at your wake to see if you are making a slight arcing turn or going straight. Realize your wake will move with the water current on the surface of the water, so it's a good technique to know which way the water current is flowing when your rowing.

How to look ahead of you (about every 10 strokes):

At the catch, as your start your leg drive, turn your head to one side and glance ahead of you for any obstructions (buoy, boats, scullers) ahead or your boat and also check to see if your bow is still pointed toward the next turn point. You have about 1 second to look, so it's a quick glance. The next stroke, look to the other side. Turn and look about every 10 strokes or more often as needed.

A common tendency is to look on the recovery, turning at the finish, but the connection is broken on the recovery (oars not in the water) and the boat is not stable. Turning without maintaining your center of gravity exactly over the centerline of the boat will tip the boat.

When learning to scull, it's OK to stop rowing, return to the safety position, and then turn around and take a good look at where your bow, then stern, are pointing. Make heading corrections as needed, then start rowing again. When you get comfortable reading your wake and seeing how the boat is drifting, then try to make your head movements quicker and in sync with the rowing stroke as described above.

Or buy a mirror that clips to your sunglasses or hat, which eliminates the need to turn your head to see what's ahead, but the field of view is pretty small.

How to turn when stopped

From the safety position, row using arms and back only (no legs)

If the wind is blowing the boat towards the shore, turn the bow into the wind. It's much more efficient to row away from the shore than back away from the shore if the wind blows you too close to shore.

Turn into the wind if the wind is affecting your boat. If the wind is blowing the boat towards the shore, turning into the wind will enable the rower to row away from the shore if needed. (Rowing normally is much more effective than backing away from the shore.)

Row the oar opposite the direction you want to turn using arms and back.

To tighten the turn a bit, square and bury the other oar in the water.

Advanced technique: Pivot turn, or zero radius turn:

Using back and arms only (no legs). Starting from the finish, push (back) one oar (left hand in this example) in the water away from you and feather the other oar (right hand) and skim the water surface as you extend your arms and back. The rowers arms and back move just like they do on the recovery, except one oar is backing in the water.

At full arm and back extension, feather the oar just backed (left hand) and square the opposite oar (right hand) you just skimmed.

Row arms and back only with the right hand. Let the left hand oar skim the surface of the water. The rowing motion is the same as the drive, except one oar is skimming instead of pulling.

Repeat until the desired heading is reached.

How to steer a straight course

Difference between heading, track, set and drift.

Heading is where the bow of the boat is pointed.
Track is the actual path over the ground the boat actually makes
Set is the effect the water current has on heading
Drift is the effect the wind has on heading.

Track = Heading +/- Set +/- Drift.

Usually no more than 10º heading change will correct set and drift.

Use a **range** for straight courses:

A range is any 2 fixed objects (not movable objects, such as birds or clouds), one near and lower in height and one farther away and taller, and ideally one is directly in front of the other.

Turn around and align the bow to where you want to go (aka, “get a point”).

Face the stern, look for a range that is directly behind the stern (maybe a discolored patch of weeds close by and a notable dip or rise in the distant tree line).

Turn around and recheck the bow point is still good.

Start rowing and try to keep the stern pointed directly at the objects in your range. As the prevailing currents affect your boat, the nearer object will appear to move right or left relative to the distant object.

If the near object drifts to the rower’s left (for example), make a slight turn to the rower’s left until the objects realign (and vice versa). Then make a slight correction to the right so that the stern is now pointed just to the right of the objects on your range. Continue small left or right turns as needed to keep those objects aligned until you reach the next point to commence a turn.

How to steer a curved course while rowing

Turn radius depends on boat speed, faster speed = wider turn radius

Boat speed is the speed through the water, not over the ground. You can be stopped relative to the water and still drift 2 miles per hour in some of tidal currents here. Boat speed is zero.

The sculler controls the turns when connected (during the drive)

The wind and water can turn the boat at any time (e.g., eddies, wind gusts)

Turning techniques affect the turning radius:

Asymmetric foot pressure: (assume turn to rower's left is desired)

Used for minor course corrections during straight runs or for navigating a very wide radius turn in the waterway.

Row with equal pressure on both oars, but push all your leg pressure during the drive only on one foot. The boat will turn slightly to the opposite direction. For example, pressure on only the right foot will make the boat turn slightly to the rower's left.

Resume equal pressure on the feet to stop the turn.

Asymmetric oar pressure for medium radius turns: (left turn)

Use the foot pressure technique as above, but also

Pull harder on the right oar, but ensure both oars enter and exit the water at the same time. The oar arc through the water for the oar with the greater pressure will be larger than the oar with less pressure. To turn left, apply more pressure and make a greater oar arc with the right oar compared to the left oar.

To tighten the turn even more, apply the most force immediately after the catch so the bow is pushed to the opposite side. If a greater force is applied at the finish of the stroke than the catch, the stern will be pushed to the side with the most pressure, thus reducing the turn radius.

How to avoid the weeds

A common tendency is to row only one oar in a series of short strokes with the oar closest to the weeds. This is not usually effective. A technique called "dragging an oar", which is a technique you'll use for every docking, is a better way:

If within 15 feet of the shore, and you don't want to be there:
(Assume the shore is on your left for this example)

Stop rowing, move to the safety position (knees down, back straight, arms holding oars perpendicular to the boat, oars feathered on the water)

Lean away from the shore (to rower's right in this example) and slowly square only the oar opposite the shore (right hand oar). Keep the other oar feathered and slightly above the water surface.

Keep the oar in the water squared and fully buried in the water as the boat turns into the squared oar, slows and stops.

When stopped, check your heading and lightly row with one oar as needed to get your desired point.

Row normally (both oars) away from the weeds and back to your desired course.

How to make an emergency stop (i.e., avoid hitting nearby in obstacles, e.g., logs, boats, weeds,)

Stop rowing and return to the safety position

Smoothly move to oars towards the square position while raising both oar handles upward (so the oars are buried in the water)

Try to maintain the same heading, throughout the stop, unless you want to turn the bow away from a very close in obstacle (as in avoiding the weeds)

When stopped, get the oars on the surface and feather them

When ready to row, get your point and row away

Advanced Technique: (reverse feather or over feather)

Advantages: Stops in the minimum distance possible.
Disadvantages: Very unstable maneuver, expect to flip at higher speeds.

Stop rowing and return to the safety position with knees down, arms and back fully forward, keep the elbows locked. Poise for a tremendous force on your arms and back. Try to keep your elbows locked until the boat is stopped.

Very slowly and deliberately, move both oars past the normal feather position so the top edge of the blade (when squared) begins to dig into the water. Decrease and/or increase the amount of reverse feather pitch to maintain balance and deceleration on each oar. Try this in a very stable boat (Alden or Maas) and slow speeds initially.

Depending on the boat speed, a tremendous amount of force can be felt, so over feather the blade very slowly and maintain equal pressure on both arms. The greater the over feathered pitch and the faster the boat speed, the more force will be felt. But the more the blade pitch is over-feathered, the quicker the boat stops. Keep the elbows locked.

How to get out of the weeds

Stop rowing and return to the safety position

Back away from the shore:

Starting at the finish position with both oars squared and in the water (not mud), push both oar handles with the arms only (no back or legs)

Several very short and choppy strokes may be needed to back away from the weeds.

Do not attempt to row in mud!

Mud is more of a solid than fluid. In water, the tip of the oar actually slips through the water so we can keep the oars firmly against the oarlocks at all times. But mud will essentially pin the tips of the oars, and the only way you can move the boat is to allow the oar to move inboard off the oarlock. This greatly reduces the stability of the boat, especially if only one oar is in the mud. If one side is pinned by weeds or mud and you can't get the oar into water, consider getting out of the boat, pushing it into deeper water, and then getting back into the shell.

Session 4: Basic Sculling Technique (use Alden riggers placed on dock).

At the dock, set up the Oarmasters (rigger and seat assemblies for the Aldens) and place sculls nearby. The instructor describes and demonstrates the:

1) Preferred method to put oars into oarlocks for boats with a skeg. For and Alden, the boat may be rigged on the dock complete with oars in oarlocks and then placed in the water.

- Open oarlocks, ensure the oarlock gate points towards the stern, so pressure from the oar during the drive is applied on the fixed pin of the oarlock, not the rotating oarlock swivel.

- Insert the appropriate oar (port or stbd) and ensure the screw cap on the gate covers the “latch” of the gate so the gate can’t be popped open while rowing.

2) Adjust footstretchers so at the finish of the stroke (a bit of layback, legs fully extended and hands close to the rower’s sternum) there is about 5-6 inches (~ a fist and a half) of space between the butt ends of the oars. If there is more than this, the rower needs to come closer to the oarlocks, so move the stretchers toward the stern, or vice versa if less than a fist and a half distance.

3) Set and safety positions

Safety: Knees down, oars are perpendicular to the centerline, one hand on each oar. This is the most stable position in the boat, hence the name. The oars are like the balance pole that circus high-wire walkers use, keep them perpendicular to the boat when stopped.

Set: Used in crew sculling boats to make room for the sculler behind you to scull when you’re not sculling. Oars as close to perpendicular to the centerline as you can, upper edge of each sculling blade is canted slightly upward so it doesn’t dig into the water but skims to water, near the catch position not quite fully compressed, one hand on the boat or rigger, one hand on both scull handles.

4) Catch, drive, finish, recovery portions of the stroke. Same as the ergometer work just done.

Importance of cadence, initially focus on a 1:3 ratio of time (catch-2-3-4-catch…) on the drive to time on the recovery.

Maintain erect, but not rigid, posture with upper body while seated.

Drive with the legs first, then pry with the back and lastly the arms. Shoulders can used in sculling, unlike sweep rowing.

From the finish/tapdown: hands go down crisply and the oar is feathered by rolling the oar grip forward into the fingers of the sculler, then the torso pivots forward about the hips, then allow knees to rise and slide forward with fixed body angle.

Analogy of hand height when rowing: The finger tips are lightly touching the top of a picnic table on the drive, and the top of the “door knocking knuckles” lightly touching the bottom of that picnic table on the recovery. About 1.5 inch difference in hand height between the drive and recovery.

Crossover and techniques to avoid scraping flesh.

Left over right (or right over left, personal preference, but most boats are rigged so the rower’s left oarlock (while facing aft in the boat) is slightly higher than the right.

Right knuckles tucked under left wrist at the crossover (rotate left shoulder slightly ahead of right shoulder, or pull right shoulder slightly behind left shoulder.)

Or a combination of the two.

Tapdown at the finish. Keep pressure on the oar during the drive until the tapdown. At the finish, the hands should be at the height of the sternum. Quickly push down on the oars and simultaneously feather them parallel to the water surface. Tapping down and feathering the oar happens in less that a quarter second. (Squaring the oar should take much longer, 1-2 seconds)

Grasping, feathering and squaring the oars (refer to the Peinert’s Primer for excellent description of this).

When the oar is squared, grasp the oar to the door knocking knuckles are parallel to the horizon (they are the furthest part of your hand away from your body). The same grasp as if you jumped up and held on to a horizontal bar to do a pull-up, only the arms are rotated 90° down to be level with the horizon. Roll the oar into the fingers by holding the oar with the fingertips and then lifting the fingertips forward and up to roll the oar to feather. It should not be a motorcycle-like wrist down movement (a “wristy” feathering action indicates a too tight grip on the oar).

The oar collars are squared off to match the inside of the oarlock, so you can feel or hear a thunk when the oars are squared and feathered. As long as the oar was rotated closer to squared than feathered on the recovery, the handles will rotate to squared as soon as pressure is applied at the catch if we have an easy grasp on the oars rather than a strong grip. A smooth, slow squaring action of the oar, usually started when the seat starts to move to the catch or when your hands are over your ankles, enables you to feel the oarlock hold the oar at the squared position. If squared too fast and too late, you will not feel this and may catch a crab.

Explain catching a crab and how to recover.

Stop rowing, get to the safety position with other oar and body and maintain balance. Let the boat turn and stop, do not let go of either oar.

If an oar is let go and gets parallel to the boat, the boat will usually capsize.

Turn the blade as needed to extract the oar (comes out easier if squared rather than feathered).

Explain the concept of “connection” in rowing.

Rower, boat and water all “connected”. Oars in the water, boat on the water, rower holding oar, rower in the boat.

This connection is broken on the recovery (oars out of the water), so full connection happens only during the drive.

When is the boat most stable? It depends:

When boat is stopped relative to the water:
- most stable at the safety position.
- least stable when rower is at full compression, oars out of water.

When boat is moving through the water:
- the rolling moment is reduced by the skeg and faster hull speed
- faster speed through the water = more stability
- most stable when good connection is made, (i.e., the drive)

Have each sculler demonstrate the following while on the dockside scullers:

Safety and set positions
Properly grasping the oar
Feathering and squaring the oar using primarily the fingers, not wrist
The basic sculling stroke, starting with squared blades for 10 strokes, then feathering and squaring for 20 strokes. Use very light pressure as the dock won’t move, but the dockside scullers will if you pull too hard.
Correct sculling and bladework technique as needed, ensure all participants get at least 5 minutes on the dockside scullers.

At the Oar shed area:

Locate:
- Club-owned and privately owned equipment
- First-aid kit, tools
- Inflatable PFDs and cell phone pouches
- Sculling oars and sweep oars storage areas
- Meaning of neon green and pink tape on some handles (oar design)

Meaning of dark green and dark red tape just above the blade (port, stbd)

Demonstrate: Donning and recommended use of an inflatable PFD.

If needed, pull the red handle to inflate after donning the jacket.

If overinflated, relieve excess pressure if necessary using the cap on the manual inflation valve.

Optional to wear, must be in the boat

Most rowers wear them like a fanny pack

If flipped out of the boat, it is very difficult to re-enter the boat if PDF is inflated. Consider inflating PDF only if you need additional flotation.

Equipment nomenclature: (refer to Peinert's Glossary of Terms)

Shell shorthand: 1X, 2X, 4X, 2-, 4+, 4-, 8 (or 8+)

Oars (port/stbd oars, loom/shaft, button/collar, handle, butt, blade, inboard/outboard measurement)

Shell (bow, stern, port, starboard, gunwale, bow ball, compartments, foot stretchers, riggers, 1X, 2X, 4X)

Riggers (stays, pin, oarlock, gate, height adjustment washers

Safety equipment: bow ball, heel restraints (2X), velcro shoe tie strap (2X)

Don't fasten velcro straps in rec singles too tight, allow your foot to come out easily (if flipped)

What a skeg (fin) does:

A skeg better connects the boat to the water. A boat with a skeg is more influenced by the current than a boat without a skeg.

A boat without a skeg will drift more by the wind than current than a boat with a skeg

Homework:

Review videos on getting back in the boat and sculling bladework.

LTS Session 5 (first session on the water)

Instructor Set up:

Verify launch has fuel and club required safety equipment aboard.
Verify the motor starts for the launch.
Set up dockside scullers on dock
Ensure oars are cleaned and placed on rack by the dock ramp

On Land:

Questions from previous session?
Overview of today's session:
- How to get back in a shell from the water
- Walk through everything we'll today (get equipment to return equipment)
- Dockside scullers refresher of sculling motions and bladework
- Instructor demonstration of sculling maneuvers required for qualification
- Get on the water
  - Launch
  - Practice sculling form while steering a straight course up and down the creek on the proper side of the waterway.
  - Do not row or drift around a curve or lose sight of a coach.
  - Practice 180º turns from a stop
  - Practice several dockings. Pick a place to stop before making your approach to dock.
- Get off the water
- Stow equipment

On the Dock:

Allow 5 minutes of sculling on dockside scullers for each sculler, focusing on rowing body movements and bladework.

Have scullers carry the boats and oars to the dock and put them in the water.

Instructor Demonstrations:

Demonstrate assembling/disassembling an Alden 1X.
- Adjust Alden foot stretchers before placing rigging in boat.

Demonstrate how to get into the boat:
- Secure the dockside oar in the oarlock first, then the waterside oar
- Grab both oar handles with the waterside hand
- One hand on the dock for stability
- Place waterside foot on the bench (except Aldens), the other on the dock.
- Shift your weight from the dockside foot to the waterside foot.

Take a seat

Adjust the foot stretcher so at the finish of the stroke, your hands just brush the sides of your torso. USRowing recommends 5-6" of space between your thumbs when at the finish with layback and arms drawn in.

Demonstrate how any boat will move just by moving forward or aft, or left to right.

Equal and opposite action and reaction.

The boat and the rower are a system, and the boat will move to maintain the system center of gravity as the rower moves.

Demonstrate launching off the dock

Put both oar handles in the waterside hand, and push that hand down so the oars remain clear of the dock and water until you've pushed off the dock.

Lean away from the dock (or put your weight on your waterside cheek)

Keep dockside rigger off the dock, take 2-3 pushes with the dockside arm to get the boat moving parallel to the dock.

After getting some speed, push off with a strong push at 45 degree angle to the dock to the bow points away from the dock.

Re-grasp one oar in each hand.

Square the "waterside" oar and "hold water" by raising the oar handle to bury the blade into the water, which will drag the boat's bow further away from the dock

When the dockside oar is clear of the dock, take a few short strokes with the dockside oar to get the entire boat clear of the dock.

Row away starting from half slide and building to full slide rowing after 3 or 4 strokes.

If the boat stops before the dockside oar is clear of the dock, slowly and carefully pull that oar inboard so the oar button gets off the oarlock just enough to get the blade against the dock and push away. Be slow and balanced, as this is a prime opportunity to capsize.

Demonstrate rowing forward from a stop:

Start rowing from a stop using a maximum of half slide for the first stroke.

Build to full slide (full compression) after 3 or 4 strokes. This enables the boat to gain speed and so stability before the rowers get to full compression (the most unstable position in sculling is just before the catch)

Demonstrate looking ahead of the boat (every 10 strokes or so)

After the leg drive starts and oars firmly connected,

Turn one way and look all the way to the bow

Turn the head back just before the finish

Looking at the aft horizon on the recovery to ensure the stern is still pointed opposite where you want to go

After the next leg drive starts and oars firmly connected,

Turn the other way and look all the way to the bow

Turn the head back just before the finish

Demonstrate backing from a stop:

Get to the safety position

Use arms and back only for backing.

With modern oars you need not turn the oar upside down to back.

Demonstrate the opposite way to feather the oar on the recovery from a backing stroke to keep both oars out of the water on the recovery.

Demonstrate a 180º turn (3 techniques)

One oar rowing, one oar feathered on water

One oar rowing, one oar squared in water

Pivoting

Demonstrate an emergency stop (2 techniques)

Squared oars

Over feathered technique

Demonstrate “dragging an oar” (2 techniques)

Squaring oars

Over feathered technique

Increase or decrease squaring (oar pitch) to adjust the deceleration of the boat and turn radius as desired

Demonstrate foot pressure to make slight steering corrections

Row away perpendicular to the dock

Demonstrate an approach and docking:

Approach the dock at about a 30 degree angle and “walking” speed relative to the water.

Approaching into the prevailing wind or tide is preferred, as it keeps the speed slower relative to the dock. But you’ll demonstrate both into and against the prevailing current for certification.

Stop rowing when the bow is around 20 feet from the dock and drag the waterside oar to pivot the boat so it turns to parallel the dock just as it

stops. Where to start this depends on how fast the boat is going through the water, not relative to the dock.

Demonstrate docking by backing in:

Arms and back only.
Reduce the approach angle to the dock to about 15 degrees (shallower)
Lightly back, trying your best to maintain a straight course

Feather the oars the opposite way from rowing on the recovery while backing to keep them clear of the water.

When you can no longer back with your dockside oar, stop rowing and go to the safety position with the dockside oar handle fully down to keep it well off the dock.

A few feet from the dock, drag and square the waterside oar to slowly turn and stop parallel to the dock.

On the water: Scullers to practice

Get in the assigned boat and row:

Starting to scull from a stop
Sculling and steering a straight course on the proper side of the waterway
Foot pressure for small turns while rowing
180 degree turns while stopped (try the non-rowing oar feathered then another turn with it squared to see the difference in turn diameter).
Backing 25 meters
Docking in both directions
Dock by backing into the dock

Off the water, on the rack :

Demonstrate how to find the center of gravity of a shell.
Demonstrate how to derig an Alden on the dock.
Demonstrate how to carry a boat
Demonstrate how to place the boat on a rack and secure it.
How to push off a sculler from the dock
Demonstrate how to clean the boat (or place it in slings before the rack)
Demonstrate how to clean the oars
Return the PFD, cell phone pouch and oars to the oar shed

LTS Session 5: Flip test

Instructor Set up:

Verify launch has fuel and club required safety equipment aboard.
Verify the motor starts for the launch.
Set up dockside scullers on dock
Ensure oars are cleaned and placed on rack by the dock ramp

On Land:

Questions from previous session?

Overview of today's session: (on water the same as last session)

Flip test
Focus on steering a straight course on the proper side of the creek
Practice emergency stops, dragging an oar to a stop
Turning from a stop
Docking with and against the current/winds
Backing 25 meters and backing to the dock.

Discussion/Review:
How to re-enter a shell
Required equipment in each boat and for each rower in a boat.
Hazards:
Coaches rarely hear thunder over the noise of the motor, so rowers must advise the coach of lightning seen and/or thunder heard.
How to avoid weeds?
How to get out of weeds?
Do we row in mud?
Inside corners of creek turns tend to be shallow and muddy.
Tide rip locations and what to do if encountering one
How to approach a wake
<1 foot take at a 30º angle
>1 foot, turn parallel and ride it out
Try to keep both oars feathered and on water surface
A boat supported on two wave crests might crack
3-D circular motion experienced when riding out waves
Rules of the Road
Primary rule of who has the right of way? (least maneuverable)
Who has the right of way when 2 boats are approaching each other?
Should rowers expect the right of way?

Nomenclature

WBC Level 1 certification limits

On Water:

Flip Test: Use the Maas shell for all.

PROCEDURES FOR WET RE-ENTRY

1. Right the shell if necessary (it is often not) by pressing down on the rigger nearest you, and as the shell turns up on its side, reach up and pull the upper edge or rigger toward you. If it is very windy, you must either point the bow or stern into the wind to make the boat more manageable. Beware that as the boat begins to turn over, the opposite side oars can strike you.

2. Position yourself on the bow side of the rigger, facing the seat deck.

3. Place the oar on your side of the shell perpendicular to the boat with the blade feathered on the surface of the water. Hold onto that oar handle with the hand nearest it; your hand, with the oar in it, will press down against the seat deck.

4. Push your body up on the shell using the oar nearest you for support until you are far enough across the shell to reach the oar on the far side.

5. Facing the seat deck, hold both handles in the hand closest to the rigger. Using the oars as support, by pressing the handle down against the seat deck, lift your torso up onto the boat by kicking your legs and performing a “pushup” type motion. Resist the temptation to pull on the far edge of the boat, as this will cause the boat to roll over again.

6. Once your torso is on top of the boat, swing your legs towards the bow and straddle the boat. Alternatively you can swing your legs towards the rigger so that you sit in a sidesaddle position. Either way is correct if it feels easier and more natural.

7. Raise the oar handles so that the blades are against the water.

8. Swing your legs into the boat.

9. Using the hand that is not on the oars, lift your body onto the seat by pressing between the tracks. Row back to dock.

10. Upon reaching the dock, bail as much water as possible from the shell prior to lifting it out of the water. Water adds an immense amount of weight to the shell, and may cause structural damage if not emptied prior to lifting the hull out of the water.

When all have performed the flip test, time permitting class will practice:

- Getting in the boat
- Launching
- Steering a straight course on the proper side of the creek
- Practice emergency stops, dragging an oar to a stop
- Turning from a stop
- Dock with and against the current/winds
- Back 25 meters and back to the dock.
- Getting out of the boat
- Returning equipment

At the Boathouse:

- Preview session 6
  - Everything done today plus navigating to Nayses Bay
  - Turning while rowing:
    - different pressure or rowing arc length
    - same catch and release timing despite different pressure
    - increased boat speed means wider turns
    - try to keep both oars rowing
  - Using a range to steer a straight course

LTS Session 6 - 9

Instructor Set up:

Verify launch has fuel and club required safety equipment aboard.
Verify the motor starts for the launch.
Set up dockside scullers on dock as needed
Ensure oars are cleaned and placed on rack by the dock ramp

On Land:

Questions from previous session?

More time on ergometers as needed.

Review: Backing the boat
Backing to dock
Small corrective turns when trying to go straight
Larger radius turns around bends in the creek
Emergency stops
Dragging an oar
Turning from a stop
Docking into and with the current/wind.

Overview of today's session: (on water the same as last session)

Focus on steering a straight course between turns and remaining on the proper side of the creek
Practice small corrective turns and larger turns in the creek.
Practice emergency stops, dragging an oar to a stop
Turning from a stop
Docking with and against the current/winds
Backing 25 meters and backing to the dock.

On Water: Students practice

Getting in the boat
Launching
Steering a straight course on the proper side of the creek
Practice emergency stops and dragging an oar to a stop
Looking ahead of the boat
Turning 180º from a stop
Dock with and against the current/winds
Back 25 meters and back to the dock.
Getting out of the boat
Returning equipment

At the Boathouse:

Questions?

Session 7 - 9 are essentially the same profile as session 6,

Session 9 catch-all session:

- have any student who has not yet rowed into the weeds, intentionally row in to the weeds and get back on the water.

- review how to maneuver the boat depending on the size of the boat wakes or waves if they haven't encountered a wake yet. Manuever the launch so it makes about a foot wake and see how the students react during the session.

LTS Session 10: Level I Certification

Instructor Set up:

Verify launch has fuel and club required safety equipment aboard.
Verify the motor starts for the launch.
Ensure oars are cleaned and placed on rack by the dock ramp

At the Boathouse

a) Questions from previous session.
b) The student will explain to the instructor:
   1) "4-oar" rule for sculling
   2) How to report equipment damage
   3) How to prepare for hot and cold weather rowing
   4) What to do after running aground
   5) What to do after capsizing
   6) WBC Sculling Level I certification limits
   7) How to upgrade to Level II certification

At the Dock: The student will demonstrate:

a) Knowledge of sculling terminology
b) How to properly carry equipment to dock
c) How to place boat in water
d) How to make footstretcher adjustments for 1X.
e) How to enter the boat properly

On the Water: The student will demonstrate:

a) Launching
b) Set/Safety Position
c) Sculling Technique
d) Steering/Looking along a straight and a curved 1000 meter course
e) Traffic Patterns
f) Backing for 25 meters
g) Emergency Stop
h) Turning and pivoting
i) Approach dock with and into wind/current (2 approaches and landings)
j) Docking by backing in (1 short approach and landing)

Return to Racks

a) Removing the boat from water
b) Proper post-sculling equipment care
c) Placing boat on rack
d) Strapping down boat
e) Coach updates Sculling Qualification spreadsheet