

ACA | Canoe – Kayak – SUP – Raft - Rescue

# River Safety & Rescue Terminology

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CANOE · KAYAK · SUP · RAFT · RESCUE

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**ACA River Safety & Rescue  
Discipline Committee Project**

*updated April 2020*

# Introduction

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This project was developed to create a standardized language for swiftwater rescuers using the ACA curriculum.

## Technical vs. Alternative Names

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The document presents both preferred technical terms and alternative terms. The preferred terms are intended to be descriptive. Alternative terms represent historical names or descriptions of various techniques.

**Technical Term:** Official ACA SWR curriculum verbiage moving forward.

**Alternative Terms:** Alternative or previously used names are shared in this section. Although these may be in common use, the **Technical Term** should be highlighted to ensure consistency.

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# Section 1: Wading

**Alternative Terms:** Shallow water crossing

techniques for intentionally walking or crawling across a riverbed bottom, individually or as part of a group.

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## **Technical Term: Direct Line Crossing**

**Alternate Term:** Line Assisted Wading

a river crossing technique where a line is established across the river perpendicular to the current, and anchored on both shores. The line then is used as an assistive device in wading or swimming (less preferred) directly across the current. Note that this creates a midstream vector pull on the line. In a strong current, crossing completely across the river can be challenging, particularly if swimming. The line can be angled slightly downstream to reduce this impact.

## **Technical Term: Fence Wade**

a multi-person wading system that travels roughly perpendicular to the river's current. One person at a time wades into the water and establishes a fixed position facing upstream, with their body at about a 45 degree angle to current. The next person in line wades downstream of the first, and then establishes a position lateral to and supported by the first wader. The next person enters and establishes a position lateral to the second wader.. This continues until every person in the group has waded out, creating an upstream facing fence roughly perpendicular to the current. At this point, the initial wader is now the last person in the line. They let go, wade downstream of the fence, and establish a position at the end of the fence farthest from the starting shore. The process continues with waders moving downstream of the fence, leapfrogging the fence across current, until the group reaches their destination. In a fence wade, only one participant moves at a time. In contrast, in a line abreast wade, all participants move at the same time.



## **Technical Term: Line Abreast Wade**

a line of two or more people, all facing either upstream or the shore they are traveling towards. Rescuers are oriented shoulder to shoulder and use each other to create a more stable wading platform. In a line abreast wade, all participants move at the same time. In contrast, in a fence wade, only one participant moves at a time.

## Technical Term: Line Astern Wade

a line of two or more people, all facing upstream, oriented so that each person is directly behind the person in front of them. The person in front can use a paddle as a third point of contact for balance.



## Technical Term: Two-Person Wade

**Alternative Terms:** Facing wade, buddy wade

Two people face each other, generally oriented so one looks upstream and one downstream, and crosses the water perpendicular to current. Two-person wades also can be done with participants facing river right and left.



## Technical Term: Wedge Wade

**Alternative Terms:** Pyramid

a pyramid of three or more people, all facing upstream, with one person in front and the balance spread out behind in a wedge shape. The person in front can use a paddle as a third point of contact for balance.



## Additional Reference Terms for Wading:

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**Assisted Wading:** any wading technique that uses a paddle, stick or other assistive device for balance.

**Formal vs Informal Wading Techniques:** Formal techniques are described within this section of the document. Informal techniques are created through improvisation and adaptation of existing techniques, to fit the situation at hand. For example, a tethered rescuer might break off from a wedge, recover a rescue subject, transition to a crawl, and then to a two person wade.

**Four-Point Crawl:** using hands and feet on the river bottom and crawling, moving one extremity at a time. Weight should generally be on the legs, with hands used for balance. Best used in shallow water with irregular bottom conditions, as a way to transition from wading to swimming and back

**Safe Eddy Rule:** a rule to guide decisions about where it is safe to attempt to transition from swimming to wading. It's generally safe to make this transition if:

- The swimmer is floating and not moving relative to the bottom (e.g., in a lake)
- The swimmer can place hands and knees on the bottom and hold position.

If the swimmer attempts to stand or wade and is unable to maintain footing, they should immediately transition back to swimming

**Single Person Wade:** any one person wading technique.

**Unassisted Wading:** any wading technique that does not include an assistive device for balance.

**Tethered Wade:** any wading technique where one of the waders is tethered using a quick release harness system.



# Section 2: Throw Bags

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## Throw Bag Throwing Techniques

common throws made with a 50-75 foot throw bag designed for use on the river.

- **Coil tosses:** instead of being thrown as a bag, the rope is coiled and thrown.



- **Off-hand:** any throw with the non-dominant hand
- **Overhand:** any throw done with an overhand motion, similar to pitching a baseball
- **Sidearm:** any throw done with an sidearm motion
- **Split bag tosses:** allows for 2 throws using the same rope (half of the rope in the bag and the other half is coiled)
- **Underhand:** any throw done with an underhand motion, similar to pitching a softball

## Technical Term: Back-up Belay

### Alternative Terms: Buddy belay

a belay using one or more extra rescuers to hold the belayer in position; generally used while belaying heavy or dynamic loads.



## **Technical Term: Dynamic Belay**

a belay where, instead of trying to keep a fixed belay point, the belayer moves downstream and pays line out to reduce the shock on the belayer and the load. Dynamic belays can also be achieved by the belayer staying positioned in one place and instead letting out slack in the rope to reduce the load. This belay requires effective rope management, preferably from a back-up belayer.

## **Technical Term: Friction Belay**

a belay where friction is generated using either a natural or artificial object/anchor by bending the rope around it in a partial wrap. This can significantly reduce the load the belayer needs to maintain. Common anchor choices include rocks and trees.

## **Technical Term: Hip Belay**

### **Alternative Terms: Body Belay**

A belay where the body (generally the hip) is used to create friction on the line. River belays should generally open downstream, with the load line extending from the belayer's downstream hip. Rescuers can transition from a standing hip belay to a seated belay if extra support is needed.



## **Technical Term: Seated Belay**

### **Alternative Terms: Sitting belay**

a belay where the belayer sits and can use river features such as rocks or roots to brace.



# Section 3: Swimming

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## **Technical Term:** Aggressive Swim Position

### **Alternative Terms:** Offensive Swim Position

swimmer on the belly, back slightly arched with feet at surface; swimmers can use front crawl or breaststroke; swimmers generally face the direction of travel or set a ferry angle, and generally swim hard towards their destination. Swimmers can also choose to float in this position to rest or time their next move.

## **Technical Term:** Defensive Swim Position

### **Alternative Terms:** Whitewater Swim Position

swimmer on their back, feet downstream with back slightly arched and toes out of the water; swimmers can use backstroke, elementary backstroke, sculling, or floating.

## **Technical Term:** Direct lower

A tethered rescue that places a belay team directly upstream of a rescue situation. A rescuer is belayed downstream directly to the rescue and then either pulled directly upstream or a vector pull is used to pendulum them to a shore.

## **Technical Term:** Log Walk

### **Alternative Terms:** Log Roll, Stall & Side-Step

technique for handling large diameter strainers that can't be climbed over using traditional strainer techniques; strainer is approached in a defensive position and the swimmer's feet are placed directly on the strainer as they come into contact with it. Once they've stalled out on it and while remaining flat to the surface of the water, they carefully walk and work sideways along it to whichever side offers the most promise of release.

## **Technical Term:** Non-Tethered Swimming Rescue

### **Alternative Terms:** Free Swimming

swimming rescues where the rescuer attempts to swim back to shoreline, with the rescued subject or object, but without being tethered to a belay line

## **Technical Term:** Quick Release Harness System (QRHS)

a belt that is worn on the outside of a type V personal flotation device that provides a quick release harness that can be attached to belay lines. Rescues can be tethered and then choose to be free of the tether by simply releasing the harness commonly located near their chest.



## **Technical Term: Self-Rescue**

any rescue performed by the rescue subject, without outside assistance.

## **Technical Term: Swiftwater Entry**

a shallow modified belly flop used to gain momentum and slide across the water's surface. A variety of techniques exist and the successful application of them depends on environmental conditions and rescuer competency. Any technique used should focus heavily on the prevention of head and spine injury.

## **Technical Term: Tethered Rescue**

### **Alternative Terms: Live Bait**

Any rescue where a rescuer wearing a rescue PFD with QRHS enters the water with a line attached to the QRHS. The rope will be used to aid and ultimately recover the rescuer who entered the water. The line is belayed by rescuers, generally located on the strong shore. Tethered rescues can be performed by swimmers, waders and paddlers. V-lowers and direct lowers are specific types of tethered rescues

## **Technical Term: V-Lower**

A tethered rescue that employs two belay teams upstream of, and on either side of, a rescue event. The belayers, located on both riverbanks, lower a rescuer or boat downstream to a rescue situation. The belay lines form a down-stream pointing "V" (hence the name V-lower). The lines can be used to move the tethered rescuer or boat left and right as well as back upstream.

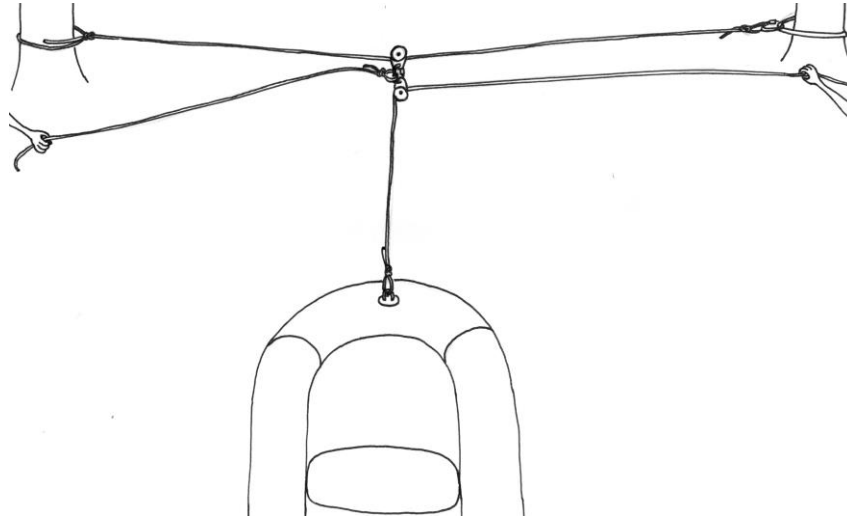
# Section 4: Boat-Based Rescue

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## Technical Term: Controlled Boat Lower

### Alternative Terms: Telfer Lower

a type of tethered boat rescue; the boat is tethered via a pulley system to a tensioned line suspended over the river. The boat can be used as a rescue platform and controlled from shore by various tethered lines, moving the boat up and downstream as well as left and right.



## Technical Term: Side by Side Kayak Rescue

**Cockpit Rim Rescue:** the rescuer places the victim's hand on the cockpit rim of the rescuer's boat, so the victim can use that as support to roll up.

**Paddle Strut Rescue:** the rescuer places the victim's hand on the rescuer's paddle, which has been placed across both boats, so the victim can use that as support to roll up.

**Rescuer Assisted Roll (Alternative Terms: Hand of God, Barrel Roll, Unresponsive Paddler Rescue):** the rescuer reaches over the capsized boat and brings the boat upright.

## Technical Term: T-Rescue

### Alternative Terms: Eskimo Rescue

a perpendicular kayak rescue of a capsized kayaker. In this rescue the rescuer provides the bow of their kayak to the midship rail of one side of the capsized boat. The person in the capsized boat must reach up, grab the provided bow, and then hip snap themselves upright.

## **Technical Term: Tethered Craft Rescue**

any boat based rescue where the boat is directly controlled from shore by control lines tethered to the boat, moving the boat up and downstream as well as left and right.

# **Section 5: Mechanical Advantage**

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**Anchor:** a strong fixed point to initiate rope work from as a base of operation. Ideally, an anchor should be able to function in several directions, to manage a dynamic load, and to allow line control and management close to or on shore.

**Complex Systems:** A complex system is a mechanical system that doesn't meet the definitions of simple or compound systems. Complex systems usually include travelling pulleys that move in the opposite direction of the load. These systems are less commonly used by swiftwater rescuers.

**Compound Systems:** In a compound system, one simple system pulls on another simple system and some of the travelling pulleys move at a different speed than the load.

**Damper:** a dead weight object that is fastened to the load end of a mechanical advantage system in an attempt to stop or slow the force of potentially broken equipment in the event of system failure. Dampers are intended to protect the haul team near the anchor from injury.

**Haul Line:** a line that is directly connected to an object and used to haul or move the object.

**Load Releasing Hitch:** a hitch that allows a load to be released in a controlled fashion while the system is under load. Examples of a load releasing hitch include the tensionless hitch, munter hitch, mariner's hitch and the radium release hitch.

**Mechanical Advantage (MA):** the advantage gained by the use of a mechanism in transmitting force; specifically: the ratio of the force that performs the useful work of a machine to the force that is applied to the machine.

**Simple Systems:** In a simple system, one rope is routed between pulleys on the anchor and load, and all of the pulleys that move (i.e., the "travelling pulleys") do so at the same speed and in the same direction as the load.

**Vector pull:** a force applied perpendicularly to the long axis of the line, creating mechanical advantage. Vector pulls create significant force when the haul line is straight, but produce progressively less force as the haul line bends. Vector pulls apply force equally to the load and anchor, so it is important that the anchor is solid.

## **Technical Term: Hull Wrap for Rotation**

### **Alternative Terms: Steve Thomas Rope Trick**

Rope technique that allows the rescuer to pull upstream on the hull of a canoe or raft, rolling it upstream while emptying the water out of the boat.

## **Technical Term: Piggyback System**

### **Alternative Terms: Pig Rig**

any independent mechanical advantage system placed on to another independent system. SAR teams will often have pre-built simple 4:1 piggyback systems that can be added to a separate haul line. One of the most common versions of a piggyback system in the boating industry is a compound 4:1 pig rig, because all it requires beyond a traditional Z-drag kit is one more haul line.

## **Technical Term: Tension Diagonal**

### **Alternative Terms: Zip Line**

a line tensioned diagonally across moving water, and used to move people and equipment across current.

# Section 6: Stabilization Lines & Cinches

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Line systems used to rescue or recover entrapped people and pinned objects

**Cinch System:** any rope based system that creates an encircling system around something (e.g., a paddle, boat or person) in an effort to stabilize or release the object entrapped. Cinches are used when direct contact is unsafe or impossible.

- **Closed Cinch:** any cinch that can maintain tension on the cinched object or person at all times when it is being used, and thus cannot slip off. All shrinking loop cinches are closed cinches.
- **Open Cinch:** any cinch that can lose tension on the cinched object or person and thus at some point can slip off. Some simple cinches are also open cinches.
- **Simple Cinch:** any cinch system that includes neither attaching a line to itself to create a closing loop nor a control line to control the size of the cinch. Simple cinches are often applied to a stabilization line.
- **Shrinking Loop Cinch:** any cinch system that cinches a single line down around a rescue subject.

## Technical Term: Control line

### Alternative Term: Tag line

any line used to provide control as part of a technical rope system. Examples of control lines included lines used for river crossing techniques, cinches, foot entrapment recoveries, or to secure pinned objects.

**Snag Line:** any line used to snag and free an entrapped object at the river bottom. Snag lines are generally deployed deep in the water.

**Stabilization Line:** any line deployed to support something. Stabilization lines are commonly used to help support foot entrapped paddlers or pinned craft. The lines generally are deployed downstream of whatever is being supported and pulled tight upstream to provide support. However, they also could be used to pull something into an obstruction (e.g., to support a broached boater against a rock). Stabilization lines are generally deployed at or above the water's surface.

**Strong Side:** riverside where most rescuers are located or where extrication is easiest; the side of the river to which rescue subjects should be taken

**Weak Side:** riverside where fewer rescuers are located or where extrication is more difficult; the side of the river to which rescue subjects should not be brought.



# Types of Cinches

**One Bank Cinch:** generic term describing any cinch that is deployed from only one side of a river. One bank cinches can be simple cinches or closing loop cinches.

## Technical Term: Shrinking Loop Cinch

**Alternative Terms:** Lasso, Closed loop cinch, Closing loop cinch

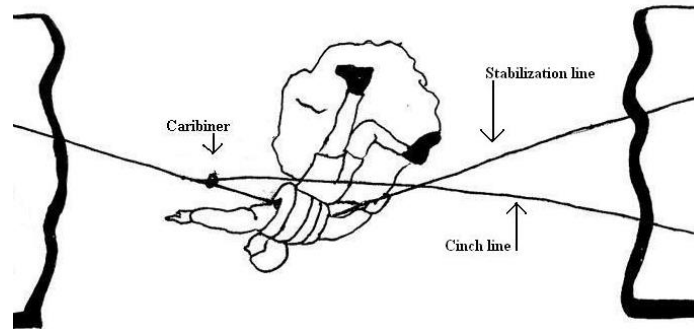
any cinch system that includes a line attached to itself in such a way that it can be tightened down around something. Control lines can be used to control the rate of closing.

**Two Bank Cinch:** generic term describing any cinch that is deployed from both sides of a river. Two bank cinches can be simple cinches or closing loop cinches.

## Common Cinches in ACA Curriculum:

- Box cinch
  - Throw rope one from strong to weak side and rope two from weak to strong side
  - Attach the end of rope one to the midportion of rope two with a carabiner. Then, attach the end of rope two to the midportion of rope one. This should create a large pocket between the carabiners.
  - Place control lines from each shore through the pocket and tension them to open the pocket and create the box.
  - Use the two control lines and two cinch lines to maneuver the box over the rescue subject. Release tension on the control lines and cinch the box down on the subject
- Kiwi cinch
  - Rescuer attaches line one to the QRHS of their Type V PFD and enters the water upstream of the rescue subject
  - Rescuer swims past the subject and receives a line from shore
  - Rescuer is then retrieved to shore so that line one forms a “U” around the rescue subject, creating a U cinch
  - Subject is then rescued as described for a U cinch
  - Line capture devices can be used to recover a line thrown upstream of the rescue subject as an alternative to a rescuer swimming the line
- Simple cinch
  - Throw a line across the river and create a stabilization line
  - Attach a carabiner to a second line and clip it to the stabilization line
  - Throw the second line across the river upstream of the subject, so that the end is on the side to which the subject will be recovered
  - Bring the end of the second line under the stabilization line, downstream of the subject
  - Pull the subject upstream, keeping tension on all lines to maintain the cinch
  - A second control line can be added from the weak shore, providing greater control of the subject

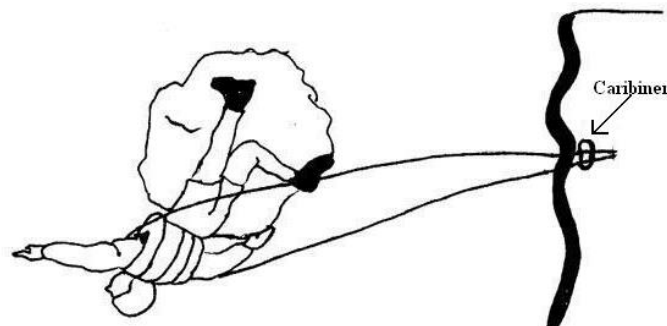
### Simple Cinch



- U cinch (single shore)

- Two rescuers hold either end of a throw rope, with the center of the line coiled between them, similar to a split bag toss
- With a coordinated effort, throw the middle of the rope over the rescue subject
- Once the line is over the subject, both rescuers move upstream, creating a "U"
- To cinch, the upstream rescuer moves downstream, going under the downstream line
- Control or cinch lines can be added to the system by clipping a carabiner over both ends the line making the U

### U Cinch



- Y cinch (two shore)

- Throw line one from the weak side to the strong side
- Attach line one with a carabiner to the midportion of line two
- While both ends of line two are held, tension line one to pull the middle of line two towards the rescue subject, forming a "Y".
- Place the Y over the rescue subject and then cinch as with a U cinch
- Alternatively, carabiner the end of line two to the length of line two, to create a shrinking loop, and then cinch
- Control lines can be added to the system

# Section 7: Additional Terms

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**Actively Drowning Subject:** actively drowning subjects are unable to speak, call for help, or effectively participate in their rescue. They typically float upright with arms extended to the side, and with only their face above water. Life jackets prevent active drowning in calm water but may not prevent flush drowning.

**Commercial Line Capture Device:** Commercially available devices such as snag plates or Reach systems that attach to the end of a throw rope. These can be used to capture lines or boats in the water, allowing retrieval. These devices at times are helpful for completing line ferries and removing frustration for missed throws when connecting a rope across the river, shore to shore, is critical.

**Distressed Swimmer:** a swimmer who is able to yell for help and able to participate (although not necessarily effectively) in their rescue. Distressed swimmers may be panicked but will be able to keep their head above water.

**Entrapment:** a situation where a person is held in place by an object (e.g., a deformed boat) or force of the water. People are entrapped, objects are pinned.

**Extrication:** removal of a person from a hazard, entrapment or simply the water.

**Ferry:** any technique that allows a swimmer or boater to move laterally across moving current.

**Flush Drowning:** a drowning that occurs to a victim wearing a lifejacket, when the victim is not pinned or otherwise held under water. Panic in moving water leads to repeated airway immersions, and inhalation of water, preventing effective breathing.

**Incident Command System (ICS)/Incident Management System (IMS):** a standardized approach to command, control and coordination of emergency response. ICS is used by professional rescuers to manage rescue scenes, but the same principles can be used by recreational boaters to manage swiftwater rescues.

**Line Crossing:** any line based technique used to help people, boats or equipment cross a river. Examples include direct line crossings, tensioned diagonals and reverse pendulums.

**Line Ferry:** any method used to get a rope across the river. This includes swimming, wading, paddling, throwing, commercial line capturing devices, rope propelling devices and drones.

**Line Receiver:** a rescuer standing by at or close to the shoreline to provide support to an oncoming line ferrying

rescuer. The receiver is critical when the line being ferried begins to move downstream, pulling the line ferrying rescuer. Line receivers dramatically increase the success of line ferries

**Messenger Line:** a small diameter line that is easy to ferry or throw. Messenger lines can be thrown or ferried across a space, and then used to pull across a larger diameter line.

**Module/Evolution:** a segment or skill session in a swiftwater rescue course. For example, swimming and wading are two separate modules commonly taught in proximity to one another as a progress or evolution of SWR skills.

**Pendulum:** a river crossing maneuver. A line is established perpendicular to the river and belayed at a fixed point on one side. On the other side, a rescuer or boat enters the water and allows the force of the water to swing them downstream and across the current in a controlled crossing.

**Pin:** situation where an object (e.g., a boat) is held in place by the force of the water. Objects are pinned, people are entrapped. A pinned object may entrap a person.

**Reverse Pendulum:** a type of line ferry. A line is stretched upstream, typically 2-3x the width of the space to be crossed, and attached to the rescue swimmer or a boat. The rescuer then enters the water and ferries to the other side, bringing the rope with them.

**Self-Directed Rescue:** rescues conducted without implementation of a formal incident management or command structure. Effective self-directed rescue requires all participants to identify whatever needs to be done and to then exercise the initiative to do it. Most swiftwater rescues by recreational paddlers are self-directed. Rescues that are longer, more involved, or involve professional rescuers often require a more formal incident management structure.

**Sieve:** any feature in the river bed that allows water to pass through but does not allow people, boats or equipment to pass through. Sieves and strainers are similar, but sieves are features of the river bed whereas strainers are debris in the water.

**Strainer:** any object in the water that allows water to pass through it but that does not permit people, boats or equipment to pass through. Strainers often are trees in the water but also can be other types of debris. Large strainers often form on the upstream edge of bridge pilings. Strainers and sieves are similar, but strainers are debris in the water whereas sieves are features of the river bed.

**Strainer Bar:** A bar, typically made of schedule 40 or heavier PVC pipe, used to simulate a strainer. Strainer bars can be hand held, supported by instructors, or supported by lines anchored to shore. Strainer bars are a higher risk training tool. Instructors are encouraged to be close enough to the strainer bar that they can immediately assist a distressed student.