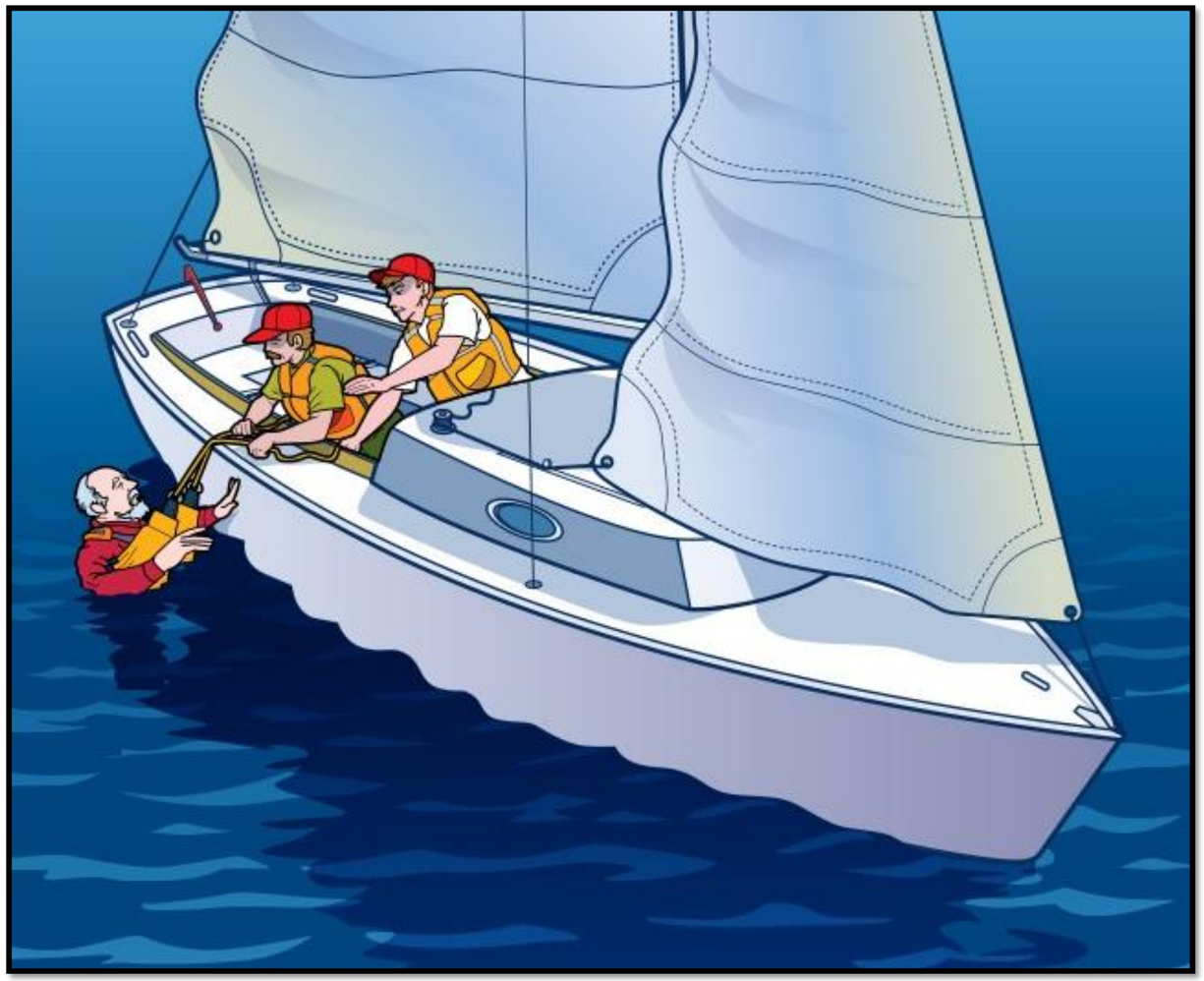
Learn to Sail

UNIT 7: SAFETY & EMERGENCIES

SAFETY & EMERGENCIES

By the end of this unit, you will know:

- Safety equipment you need on board
- Pre-sailing exercises that can help prevent injury
- Treatment of hypothermia and heat related emergencies
- Avoiding electrical hazards
- Rescuing someone who has fallen overboard
- Managing strong winds
- What to do if you run aground
- How and when to signal for help



SAFETY EQUIPMENT

Some of the federal requirements for safety equipment include:

- U.S.C.G.-approved fire extinguishers must be carried aboard all auxiliary powered vessels. Boats less than 26 feet must have one Type B-1.

- U.S.C.G.-approved life jackets: Type I, II, III or V are required for each person aboard the vessel and one Type IV (throwable) for vessels larger than 16 feet in length.

SAFETY EQUIPMENT

Additional Requirements:

- Visual Distress Signals must be carried aboard vessels *except* on boats less than 16', boats in organized events such as regattas, open sailboats less than 26' without auxiliary power, and manually propelled boats.

- All vessels must carry an efficient sound-producing device.

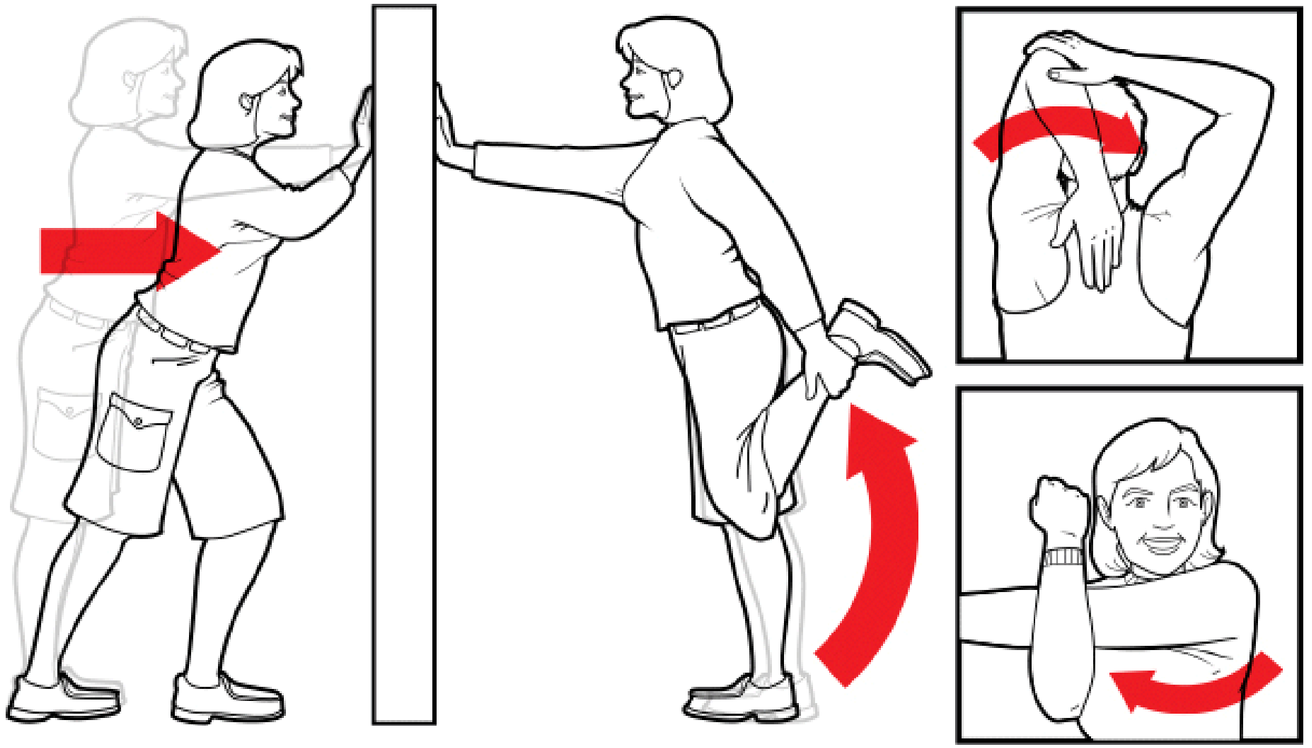
- Vessels operating or anchored between sunset and sunrise are required to display navigation lights.

SAFETY EQUIPMENT

In addition to this required equipment, it is recommended that you also carry on board:

- Additional means of propulsion such as oars, paddles or auxiliary power
- A basic first aid kit with instructions
- An anchor and an anchor line
- A VHF radio
- A tool kit with spare parts and through-hull plugs
- Navigation charts and a magnetic compass

PRE-SAILING EXERCISES



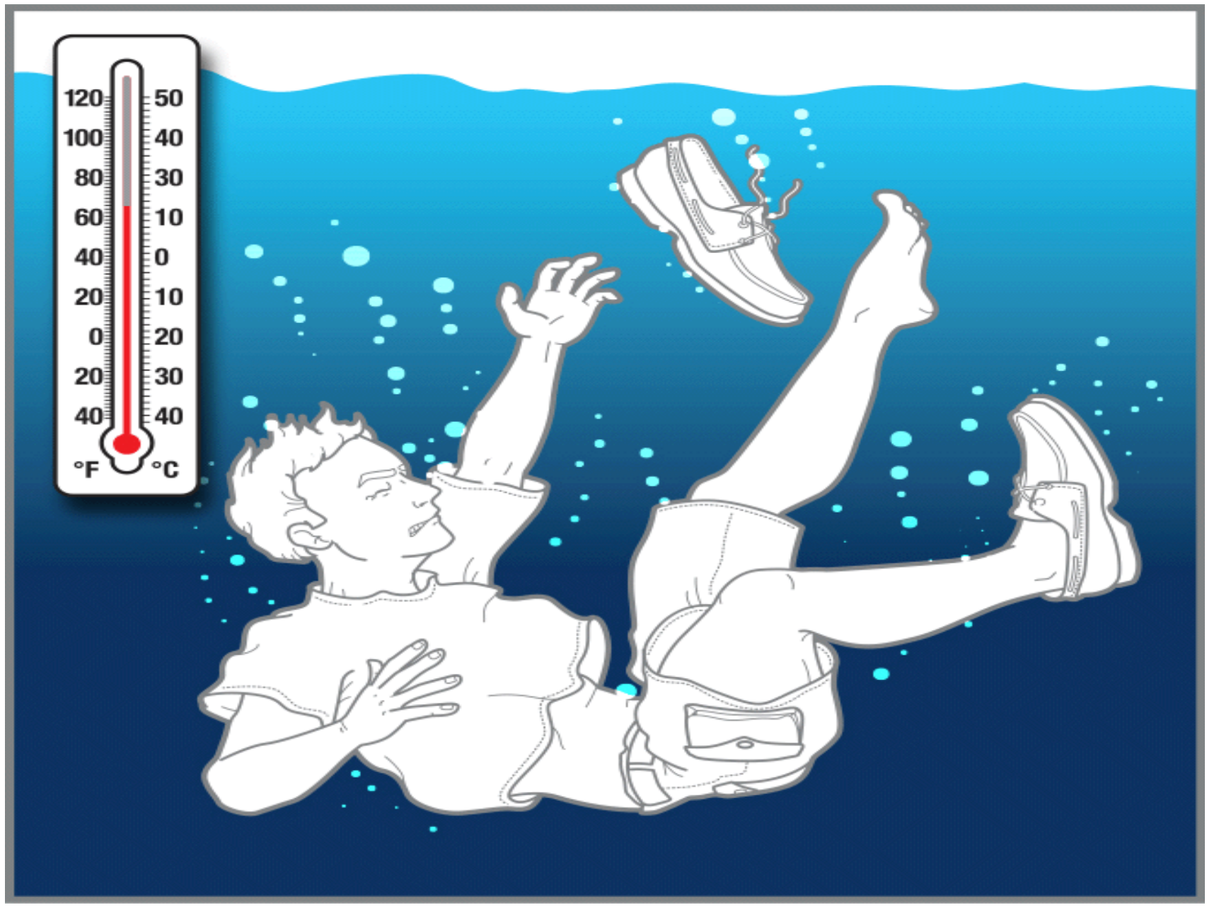
It is recommended that you take a few minutes before every sailing outing to do a few simple stretches to limber up your muscles.

Do these exercises for about 30 seconds each. Do not stretch to the point of pain.

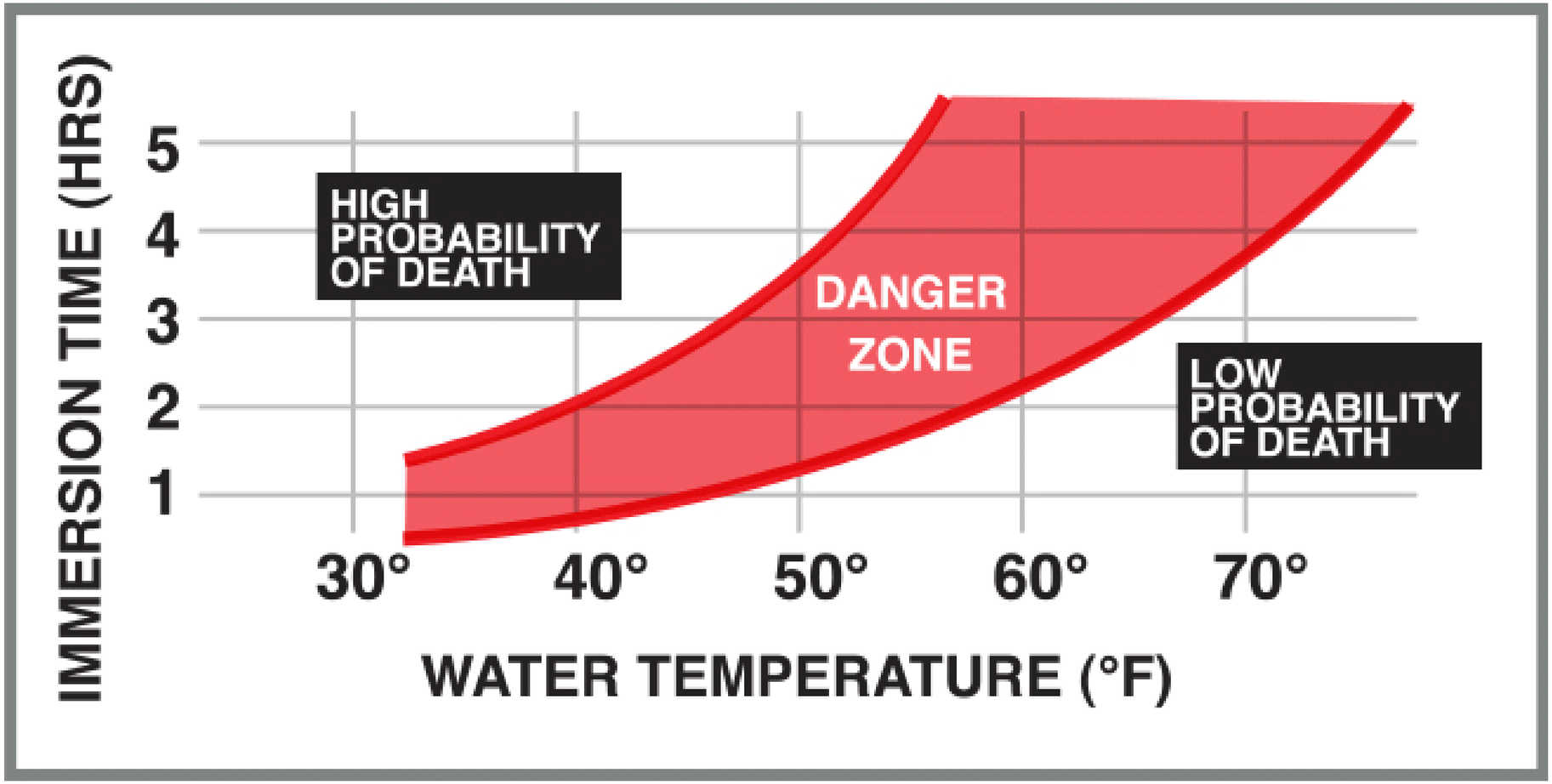
HYPOTHERMIA

Hypothermia is the result of a dangerously low body temperature. Symptoms of hypothermia include

- Shivering
- Impaired judgment
- Dizziness
- Numbness
- Change in level of consciousness
- Weakness
- Glassy stare



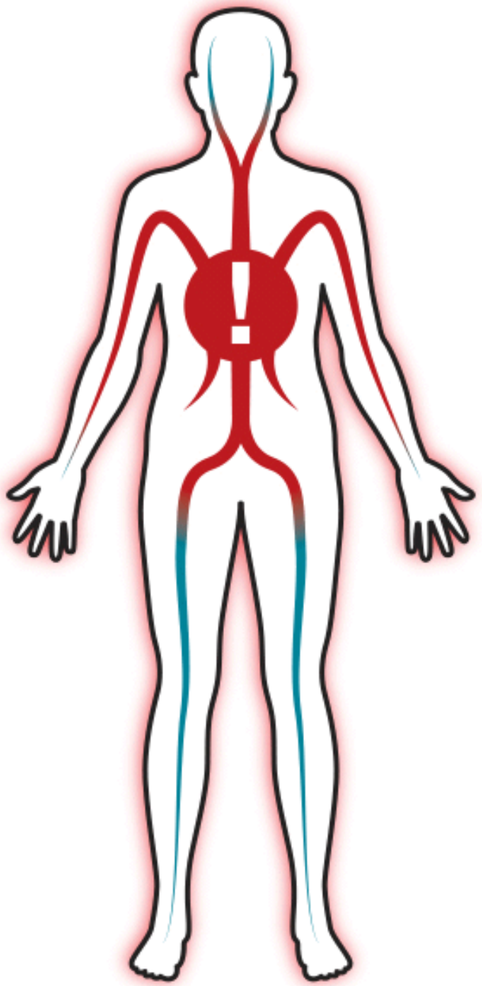
HYPOTHERMIA



HEAT EMERGENCIES

Symptoms of heat exhaustion, include:

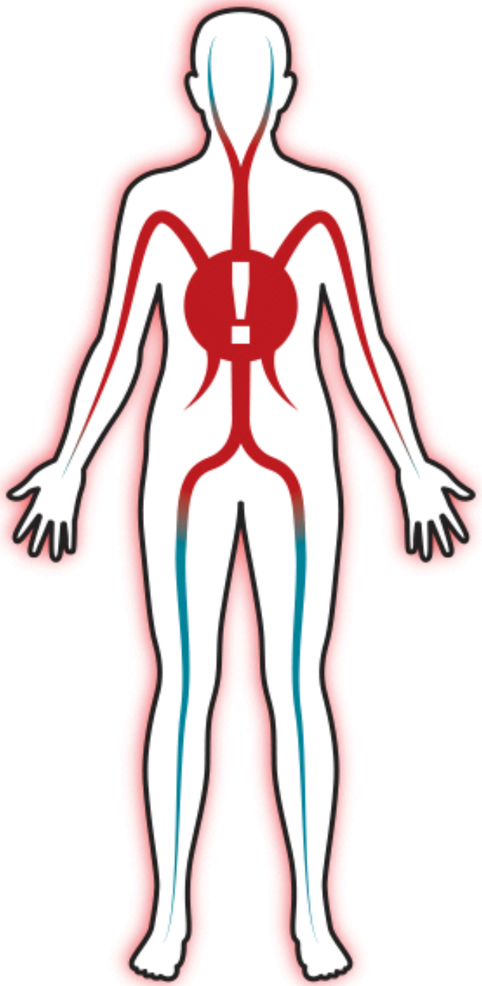
- Cool, moist, pale skin
- Heavy sweating
- Headache
- Dizziness
- Nausea
- Weakness, exhaustion



HEAT EMERGENCIES

To treat heat exhaustion:

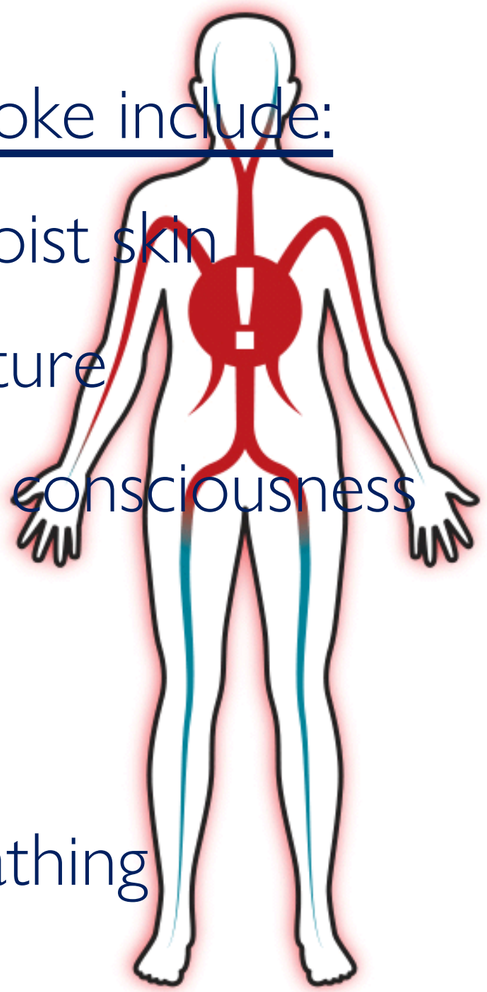
- Move person to cool environment
- Remove clothing soaked with perspiration and loosen any tight clothing
- Apply cool, wet towels or sheets
- Fan the person
- Give person a half glass (4 oz.) of cool water every 15 minutes



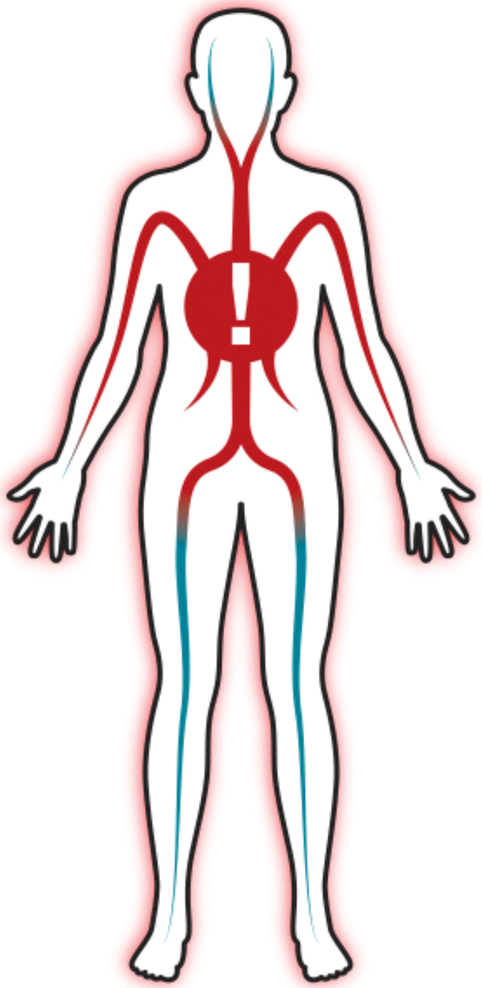
HEAT EMERGENCIES

Symptoms of heat stroke include:

- Red, hot, dry or moist skin
- Very high temperature
- Changes in level of consciousness
- Vomiting
- Rapid, weak pulse
- Rapid, shallow breathing



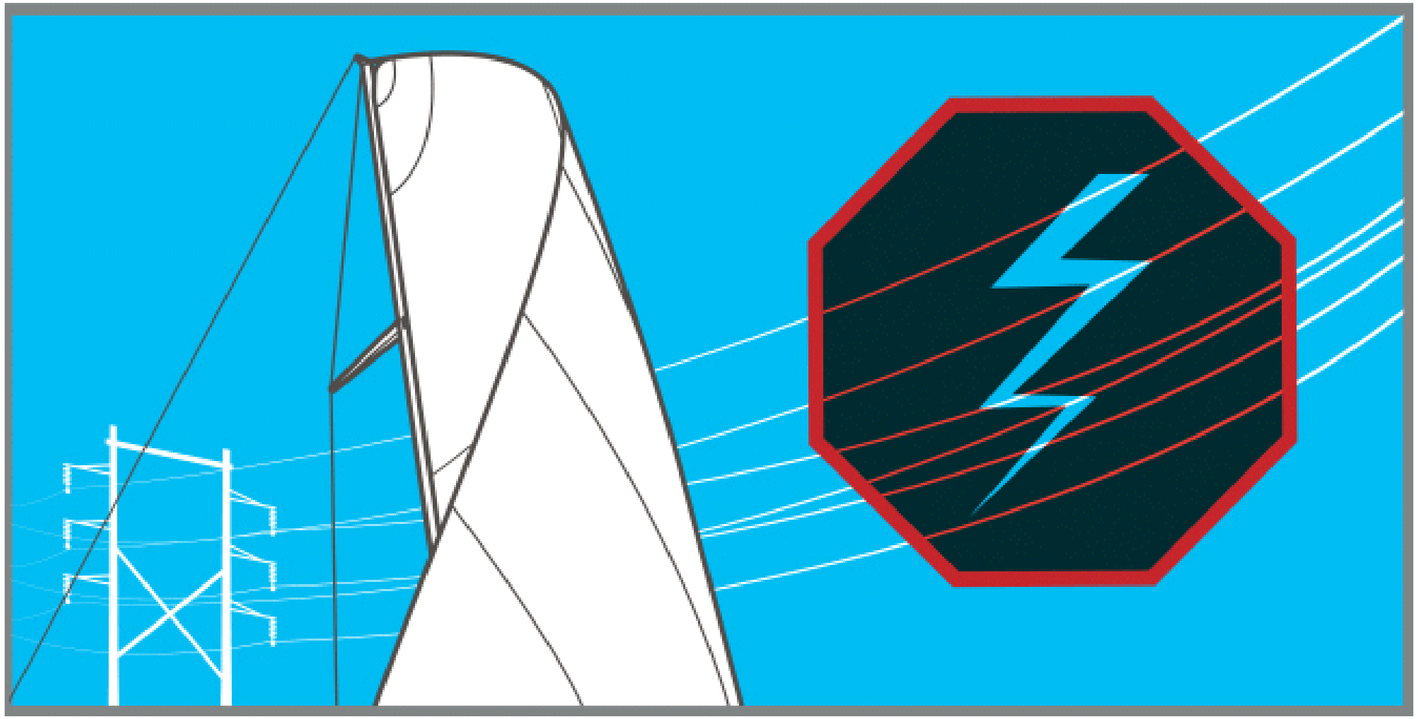
HEAT EMERGENCIES



To treat heat stroke:

- Move person to cool environment
- Apply cool, wet towels or sheets
- If available, place ice or cold packs on the person's wrists and ankles, groin, each armpit, and neck
- If unconscious, check breathing and pulse
- Seek medical attention immediately

ELECTRICAL HAZARDS

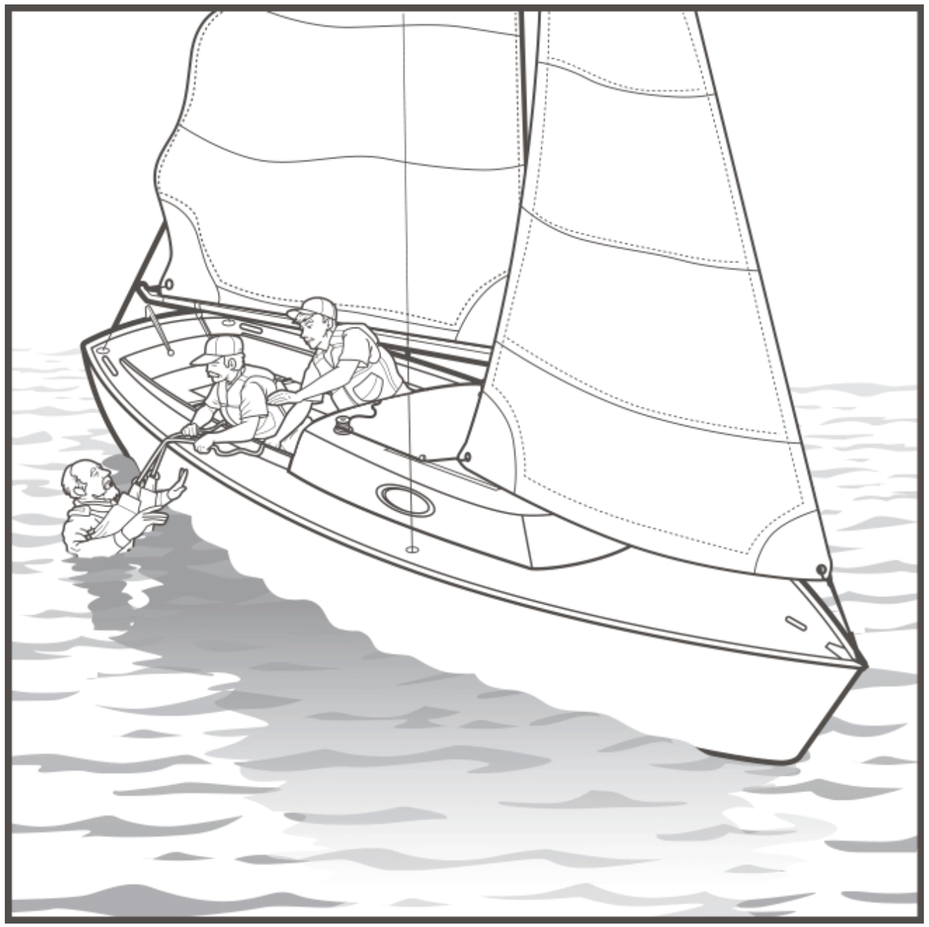


Always make sure you have proper clearance before crossing under powerlines. Remember to take into account the effects of high tide or other conditions causing high water, like river runoff or recent rains.

PERSON-IN-WATER (PIW)

There are two preferred methods of retrieving a person in the water: The **Quick-Stop Rescue** and the **Figure-8 Rescue**.

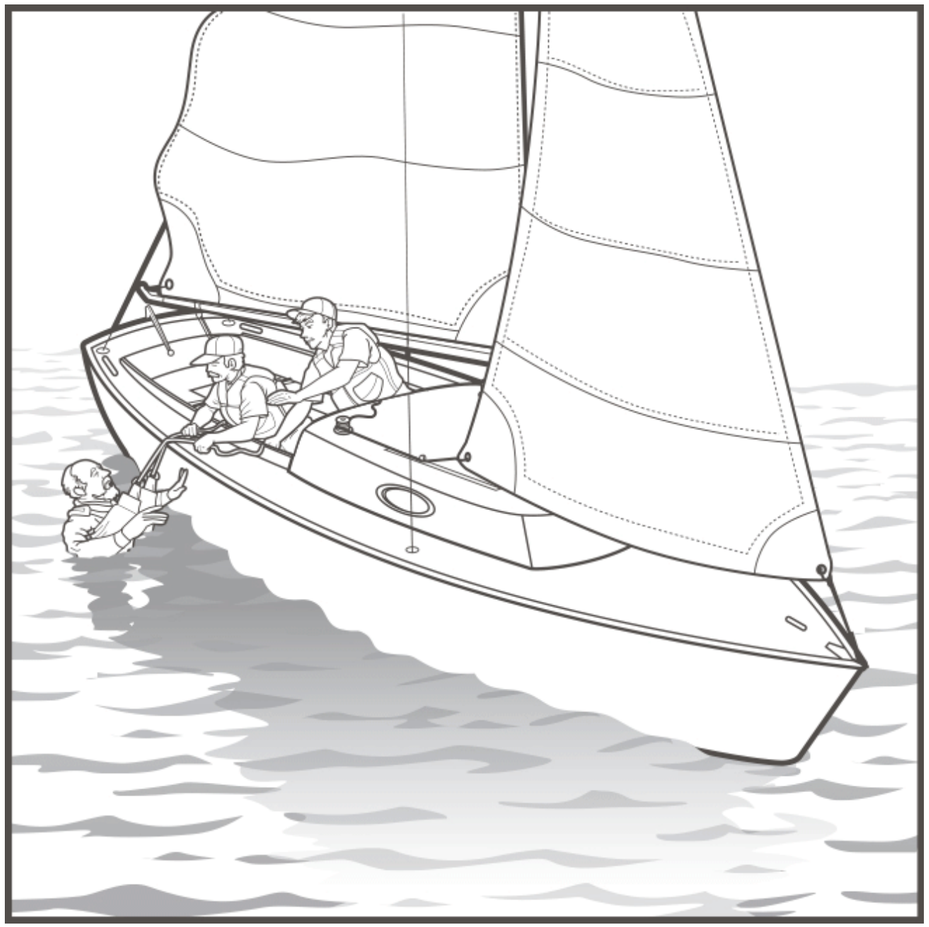
Both of these rescues involve the following key steps and should be done under sail power alone unless there is insufficient wind.



PERSON-IN-WATER (PIW)

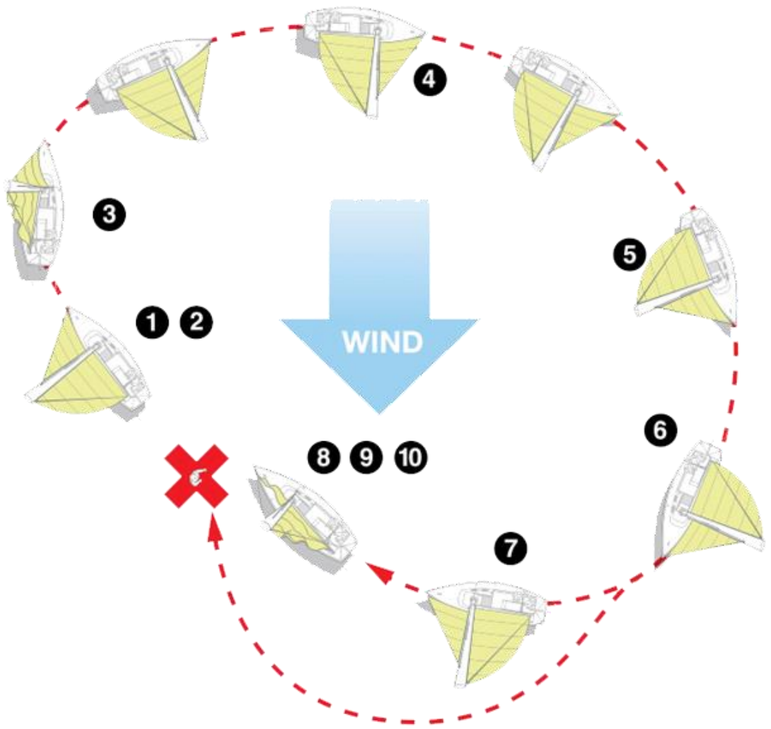
Steps for recovering a **Person-In-Water**:

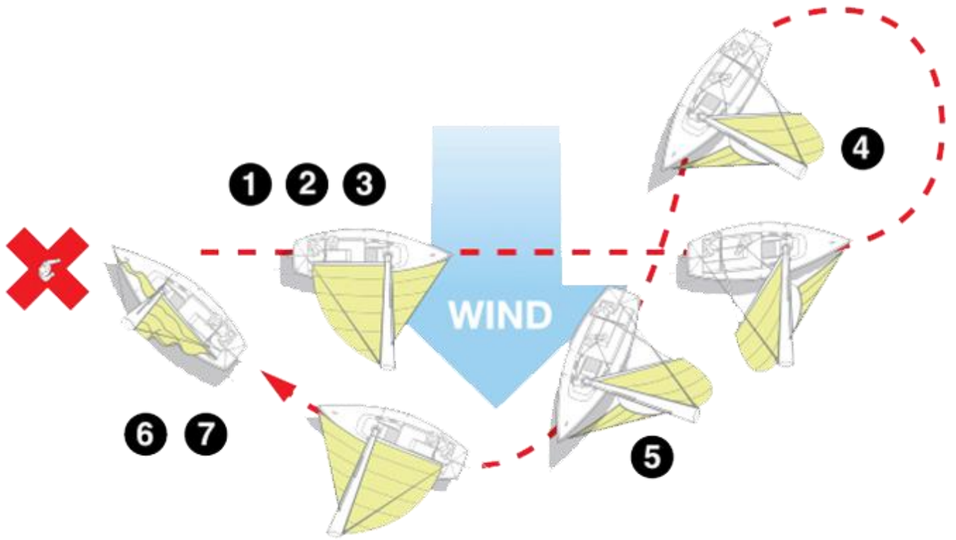
1. Get buoyancy to the PIW
2. Keep the PIW in sight
3. Head boat back to the PIW
4. Stop boat alongside the PIW
5. Make contact with the PIW
6. Attach the PIW to the boat
7. Get the PIW back on board



QUICK STOP & FIGURE-8 RESCUES

The **Quick-Stop Rescue** involves quickly reducing the speed of the sailboat. This is accomplished by turning directly into the No-Go Zone, after which the rest of the rescue is completed at modest speed. The PIW is always kept close to the boat.





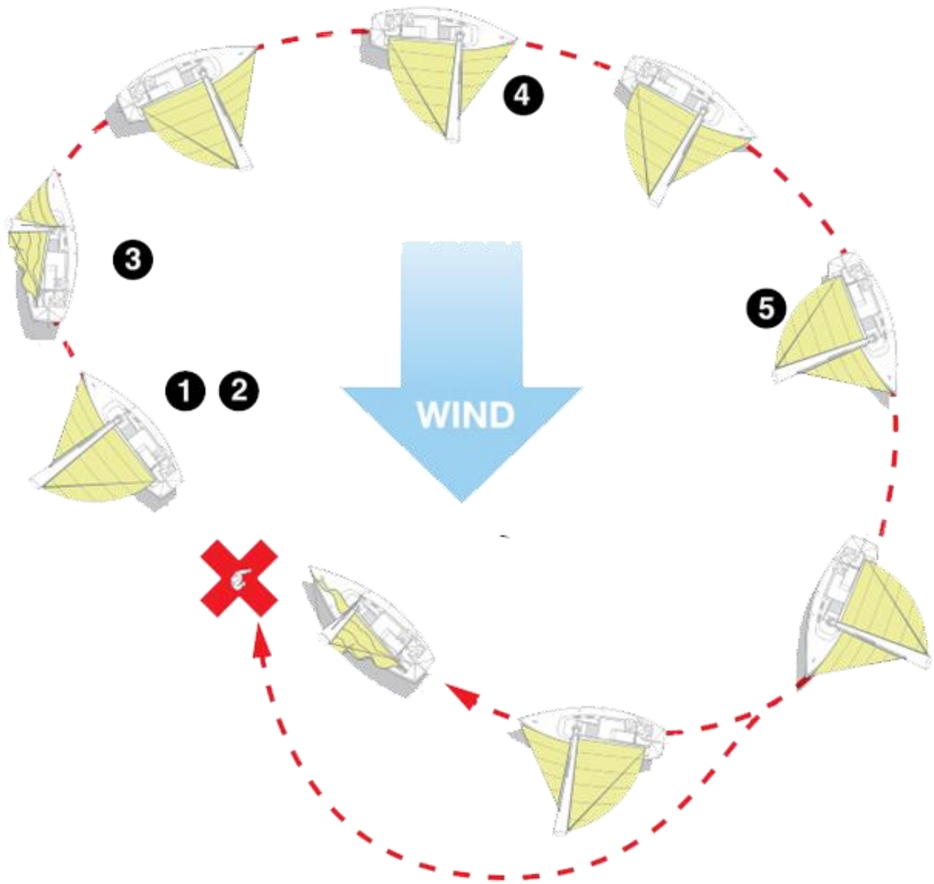
The **Figure-8 Rescue** has the advantage over the Quick-Stop Rescue in that you do not need to jibe during the maneuver. In heavy seas, this may make controlling the boat easier.

However, the downside to the Figure-8 is that it is easier to lose sight of the person in the water.

QUICK STOP RESCUE: STEPS 1-5

Steps of the Quick-Stop Rescue:

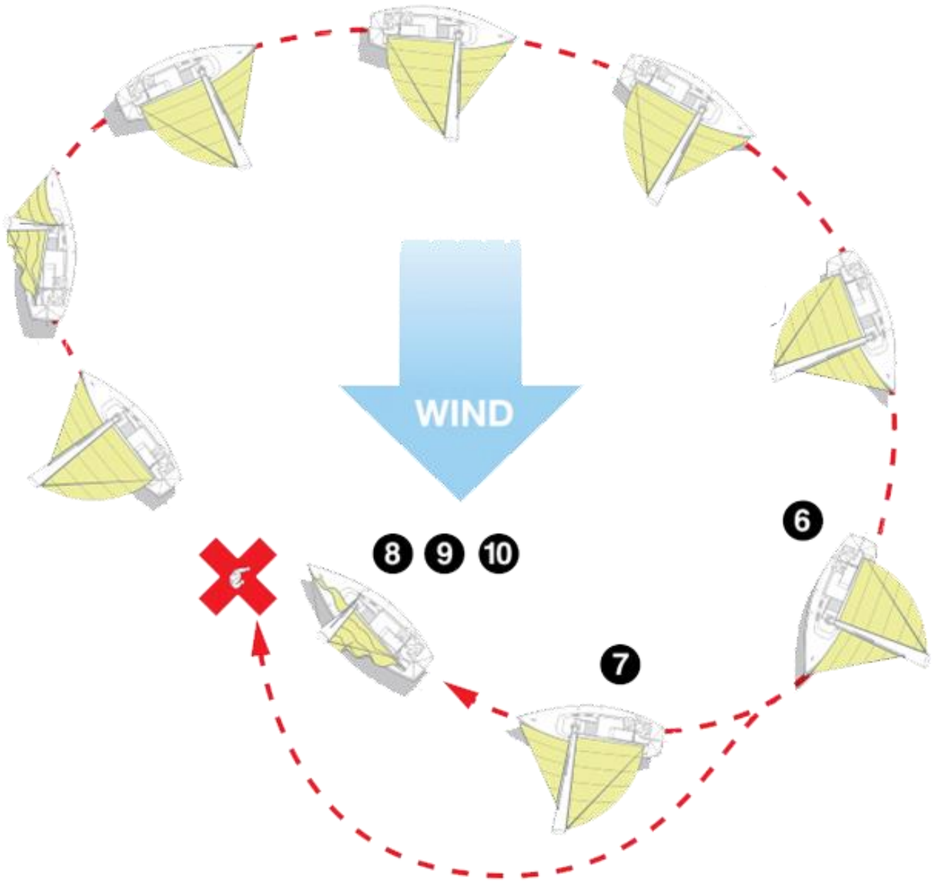
1. As soon as a crew member falls overboard, shout loudly *"Crew Overboard!"*
2. Throw buoyant objects – cushions, life jackets or life rings – to the PIW. These objects not only come to the aid of the PIW, they also "litter the water" to help the spotter keep him or her in view.
3. Designate someone to spot and point at the PIW. The spotter must never take his or her eyes off the PIW. Keeping the PIW in sight is critical.
4. Turn the boat into the wind, trimming the mainsail and jib to close-hauled. As you turn into the No-Go Zone your boat will slow down.
5. Continue to turn through the wind, without releasing the jib. Keep turning sharply until the wind is almost to the stern of the boat.



QUICK STOP RESCUE: STEPS 6-10

Steps of the Quick-Stop Rescue:

6. Hold this course until the PIW is aft of the beam. Drop or furl the jib if possible.
7. Jibe the boat to start to turn toward the PIW.
8. Steer toward the PIW as if going to pick up a mooring.
9. Stop alongside the PIW by easing or backing the sails.
10. Throw a heaving line or other device to the PIW and attach the PIW to the boat. Once the PIW is attached, drop the sails. Do not leave the PIW tied to the boat unattended. Bring the PIW on board.



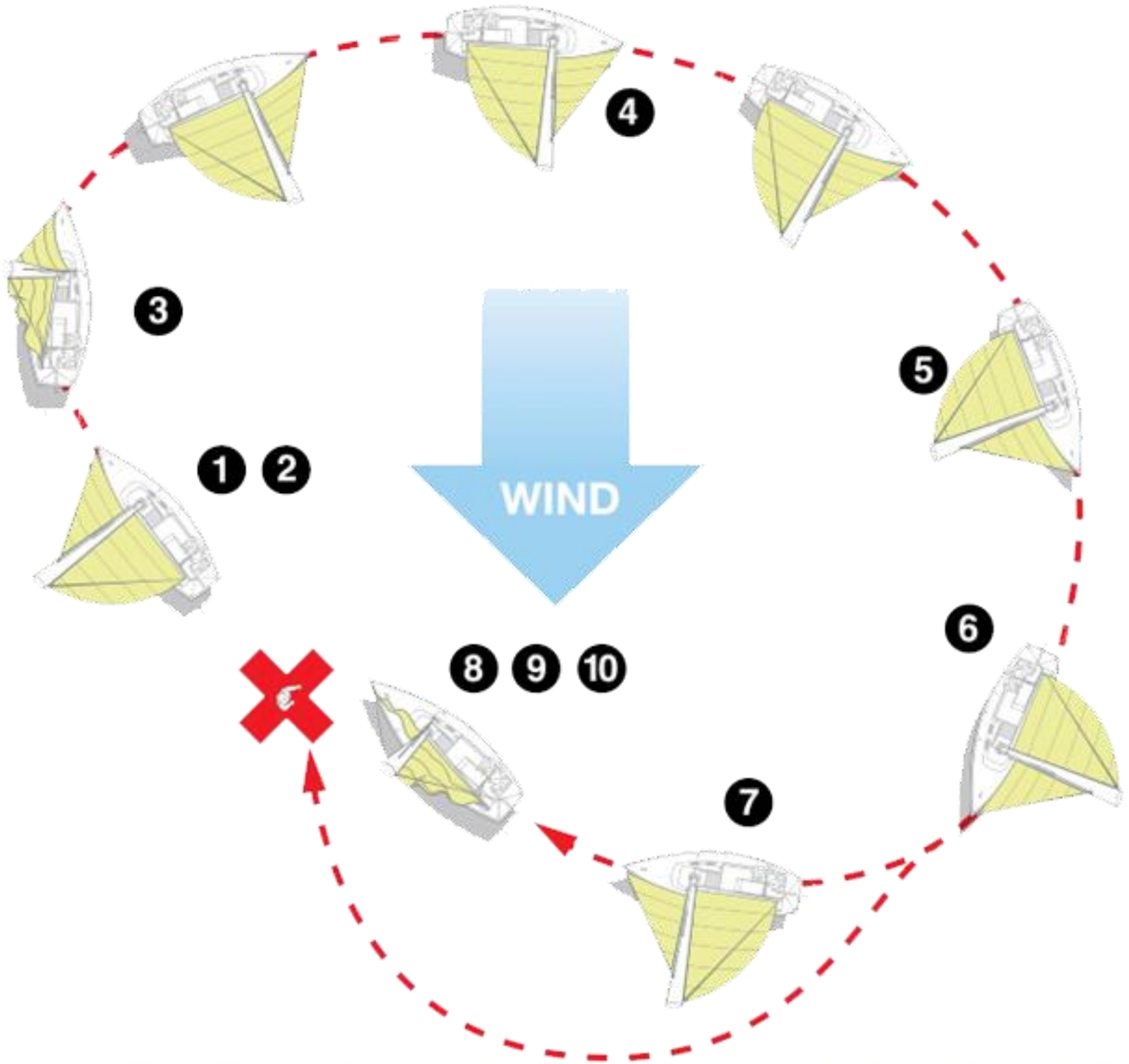

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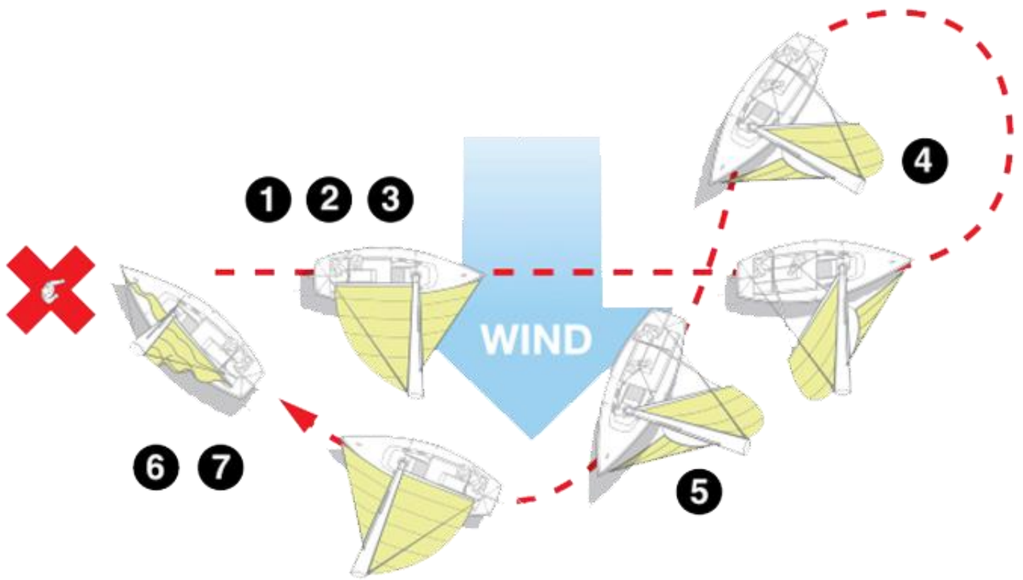
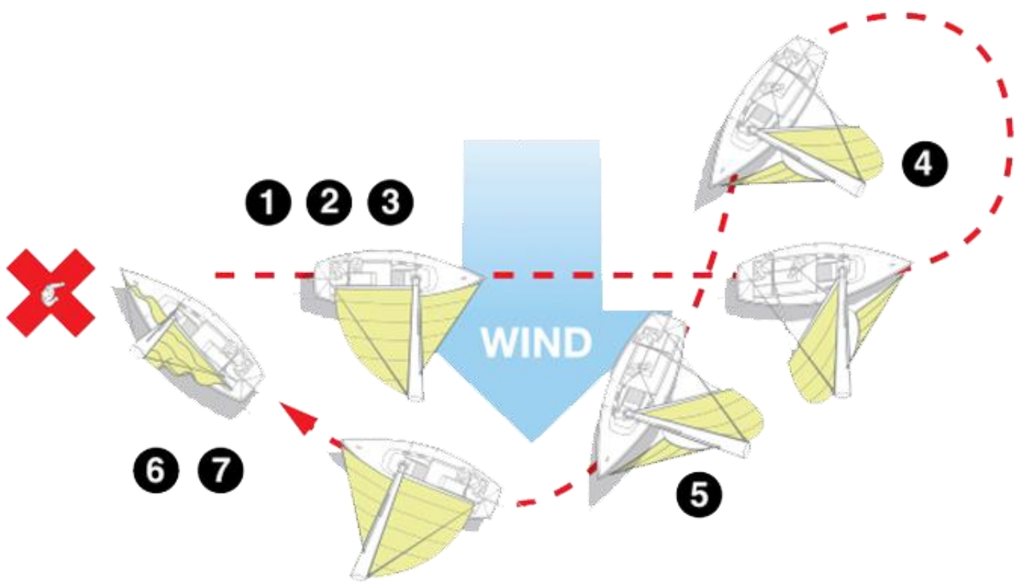
FIGURE-8 RESCUE: STEPS 1-4



Here are the steps to the Figure-8:

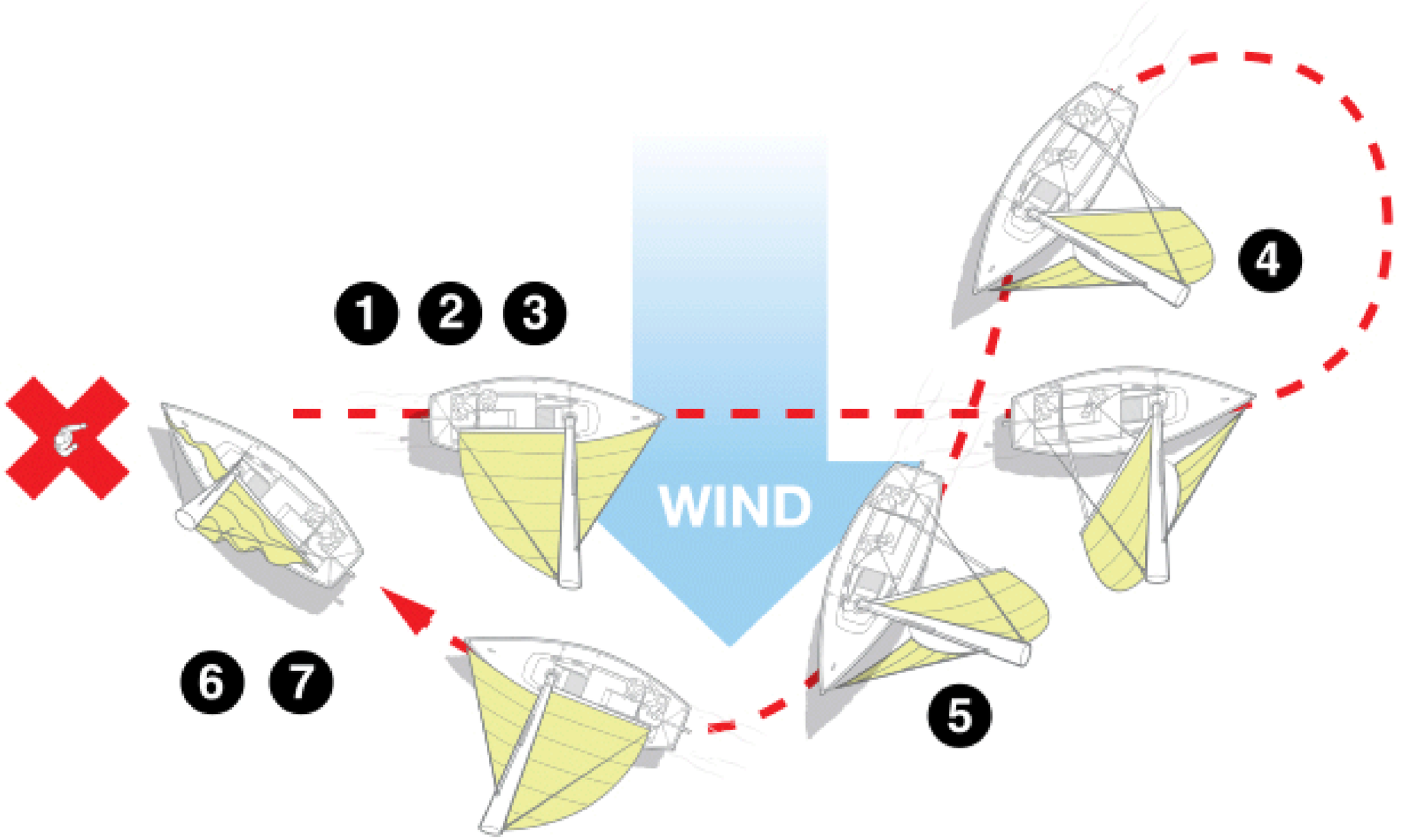
1. As soon as a crew member falls overboard, shout loudly *"Crew Overboard!"*
2. Throw buoyant objects – cushions, life jackets or life rings – to the PIW. These objects not only come to the aid of the PIW, they also "litter the water" to help the spotter keep him or her in view. At the same time the helmsman steers the boat on a beam reach.
3. Designate someone to spot and point at the PIW. The spotter must never take his or her eyes off the PIW.
4. After sailing four boat lengths on a beam reach, tack the boat hard into the wind, and then bear away on a broad reach to cross your boat's original path.

FIGURE-8 RESCUE: STEPS 5-8



Here are the steps to the Figure-8:

5. When the PIW is at 2 boat lengths away, head up towards the PIW on a close reach. A close reach gives the ability to control your speed using your main sheet as a "gas pedal."
6. As you approach the PIW, ease the sheets to slow the boat down bringing it to a stop alongside the PIW. Make sure to control your speed so you do not approach the PIW too quickly.
7. Throw a heaving line or other device to the PIW and attach the PIW to the boat. Once the PIW is attached, drop the sails. Do not leave the PIW tied to the boat unattended.
8. Bring the PIW on board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WIND
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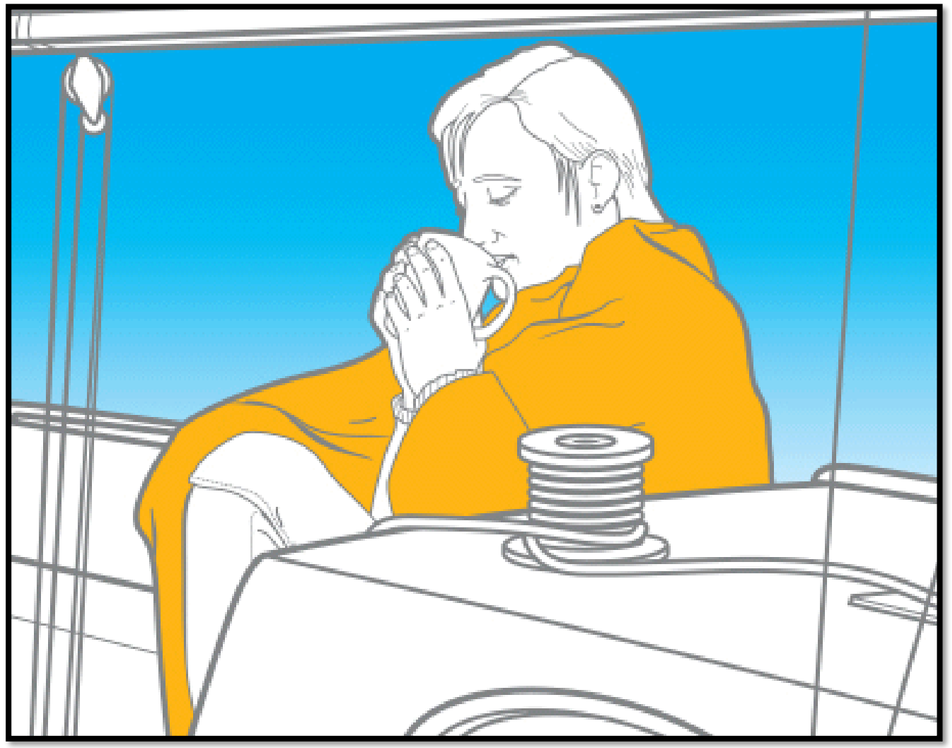
6 7

OVERBOARD RESCUE TIPS

After you have maneuvered your boat alongside the PIW and made contact with a heaving line, it is critical that you attach the PIW to the boat so that you do not lose him or her and have to perform the rescue a second time.

Do not rely on the PIW holding onto the heaving line. Here are some methods for attaching the PIW:

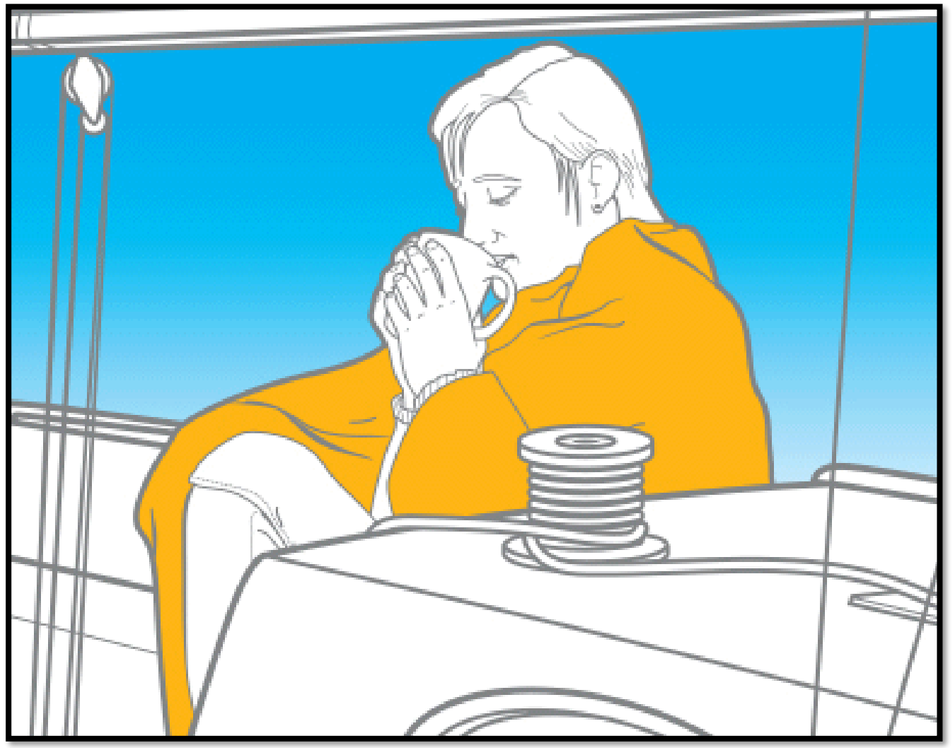
- Use a Lifesling, if you have one.
- Use the "D" rings of an inflatable sailing harness.
- Tie a bowline around the PIW



OVERBOARD RESCUE TIPS - RETRIEVAL

If shorthanded, however, you may need to improvise a retrieval method. Here are some options:

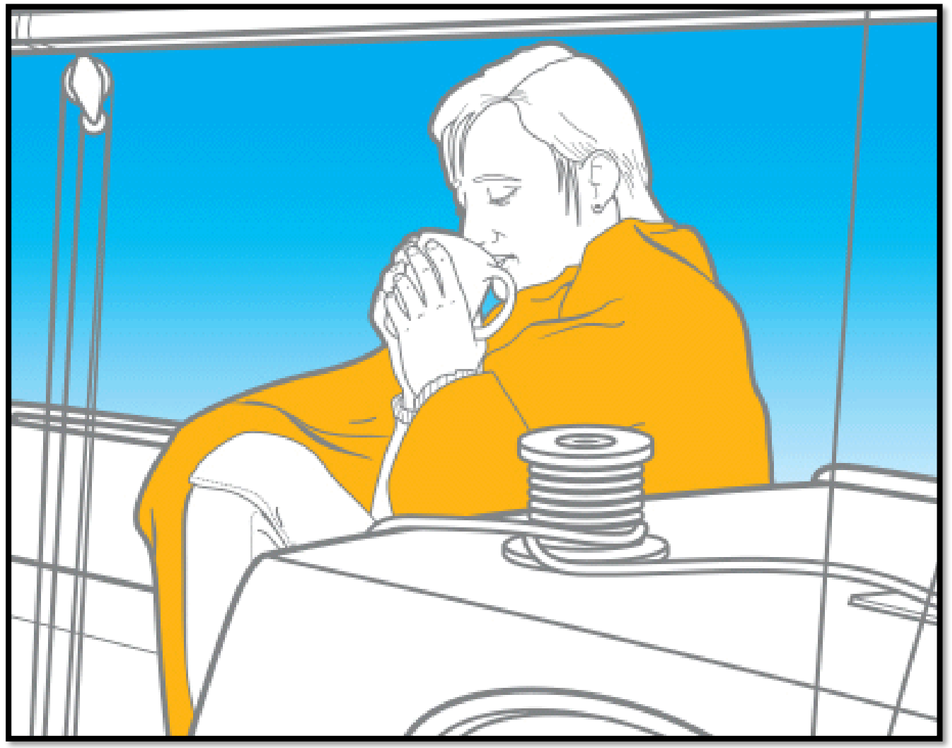
- A line over the side with a bowline tied in the end, which acts as a stirrup for the PIW to use to step up into the boat. All lines over the side should be tied on the opposite side to the PIW.
- A line over the side with a series of loops that the PIW can use to climb back into the boat.
- A paddle over the side tied in the middle, so it becomes a "T" bar for the PIW to stand on.
- A block and tackle rigged to a pre-hoisted halyard that is used to lift the PIW for the water.



OVERBOARD RESCUE TIPS - AFTERCARE

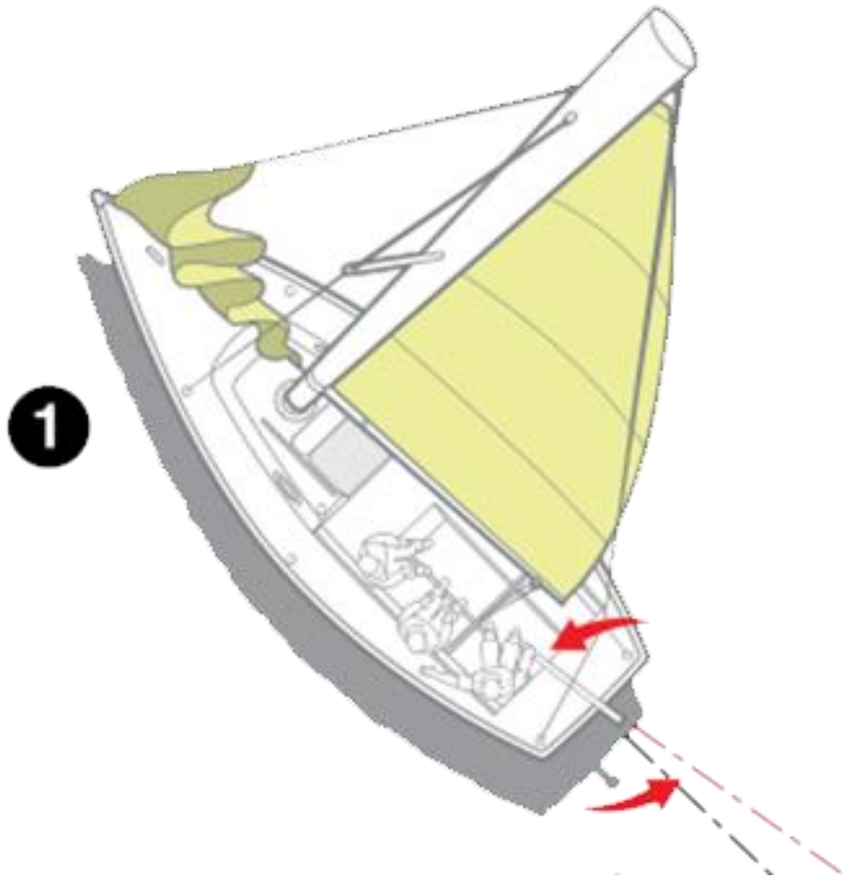
A PIW may be suffering from hypothermia, particularly if he or she has spent an extended period in the water, or in locations with cold water temperatures.

Get the PIW back to shore as soon as possible. Unless you are sailing in tropical waters, treat this as a serious first aid issue and seek medical attention for the PIW.



SHORTENING SAIL

There are three ways to shorten sail:



Lower the Jib

The easiest way to shorten sail is to simply lower the jib. However, with only the mainsail up, your boat will also be out of balance. The wind pressure on the mainsail will rotate the bow of the boat into the wind.

To keep the boat straight, you can pull the tiller slightly away from the mainsail.

SHORTENING SAIL

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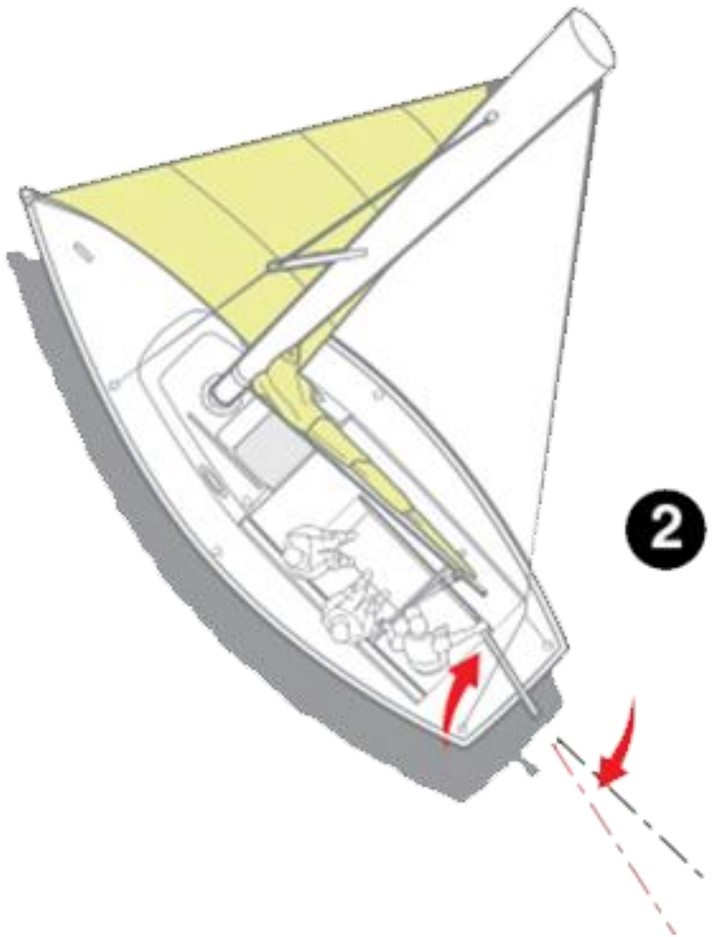


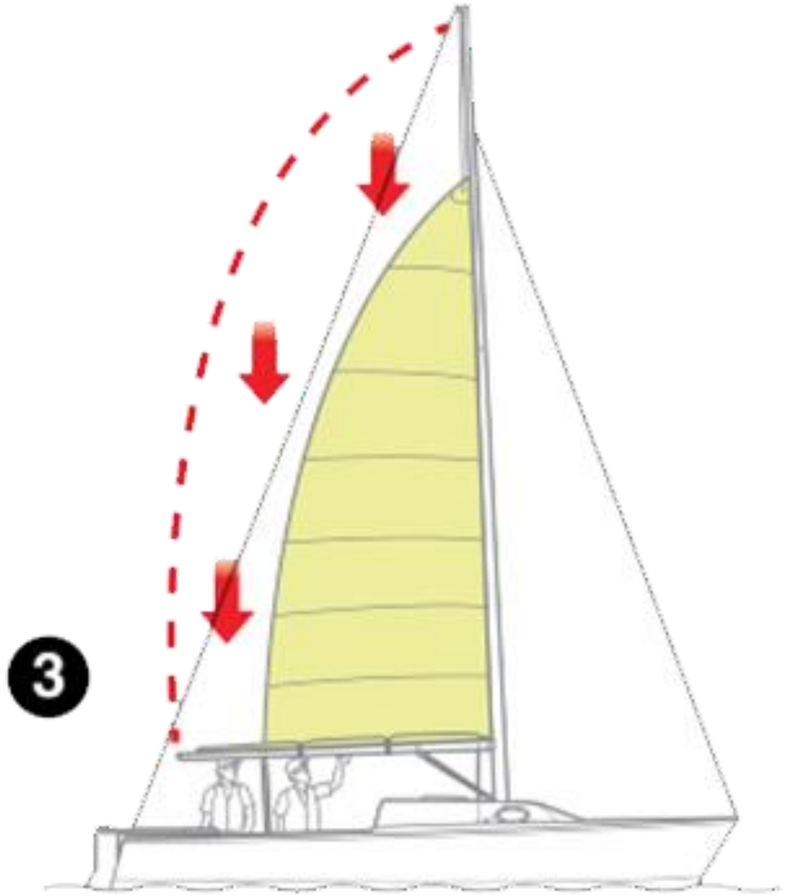
Lower the Mainsail

The most significant way to reduce sail is to lower the mainsail. However, sailing with only the jib will put your boat out of balance. The wind pressure on the jib will rotate the bow of your boat away from the wind.

To keep the boat straight, you can push the tiller toward the mainsail.

SHORTENING SAIL

There are three ways to shorten sail:



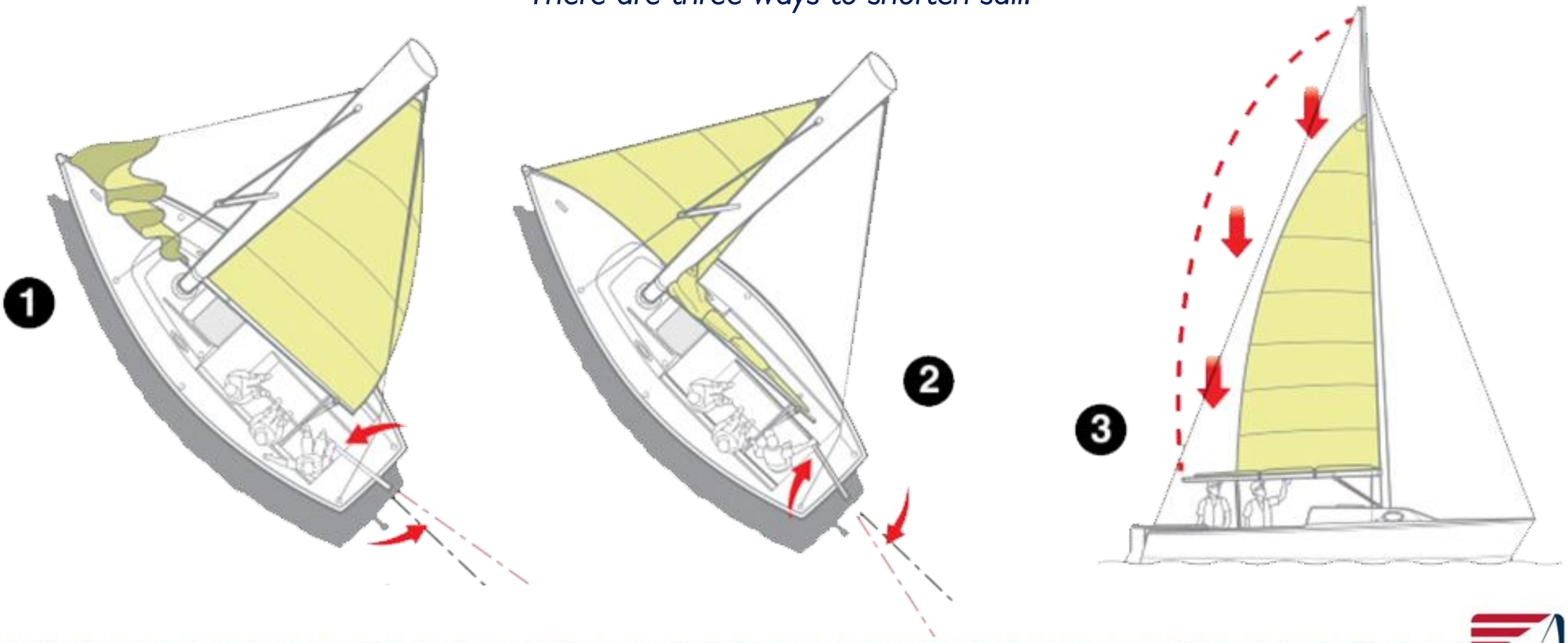
Reefing

Another way to shorten sail is to lower the mainsail partially and secure the lower portion to the boom this is called reefing.

The best time to do this is while on a close reach or while hove-to and the mainsail is luffing (when you have heaved-to and the boat is stationary).

SHORTENING SAIL

There are three ways to shorten sail:

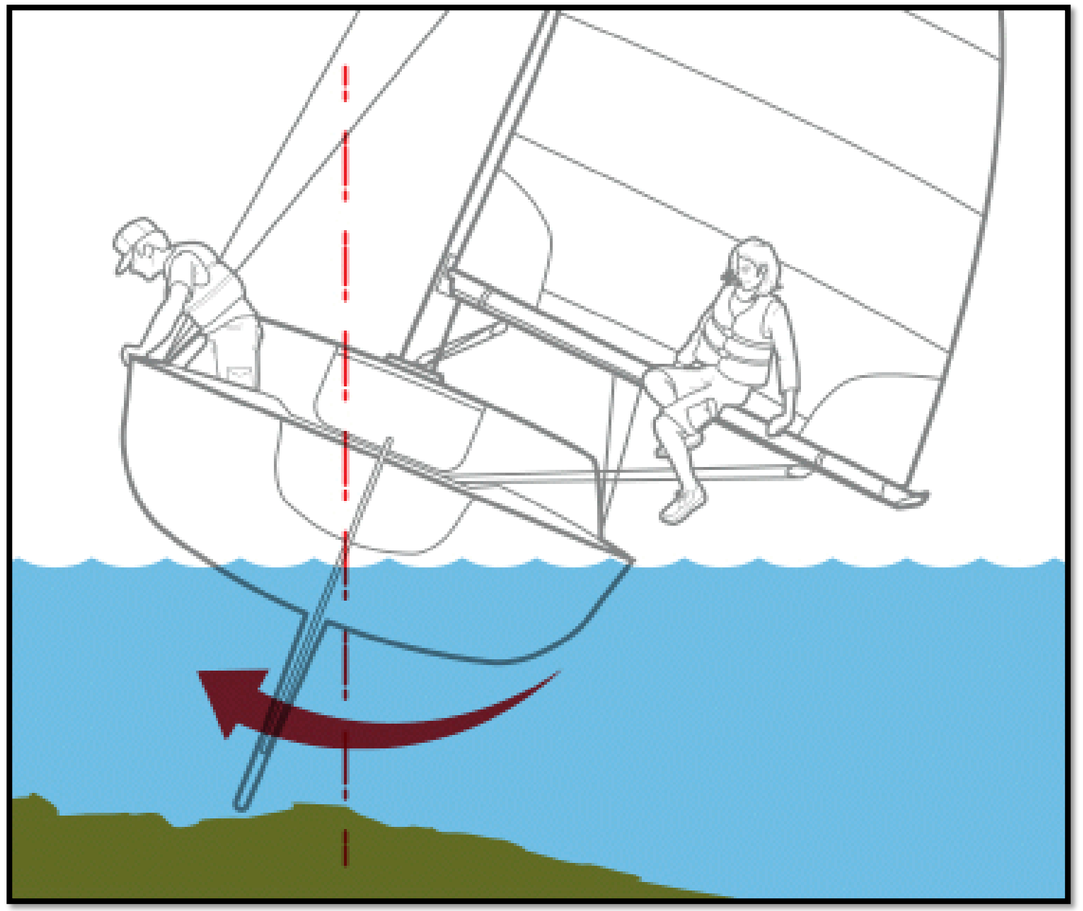


RUNNING AGROUND

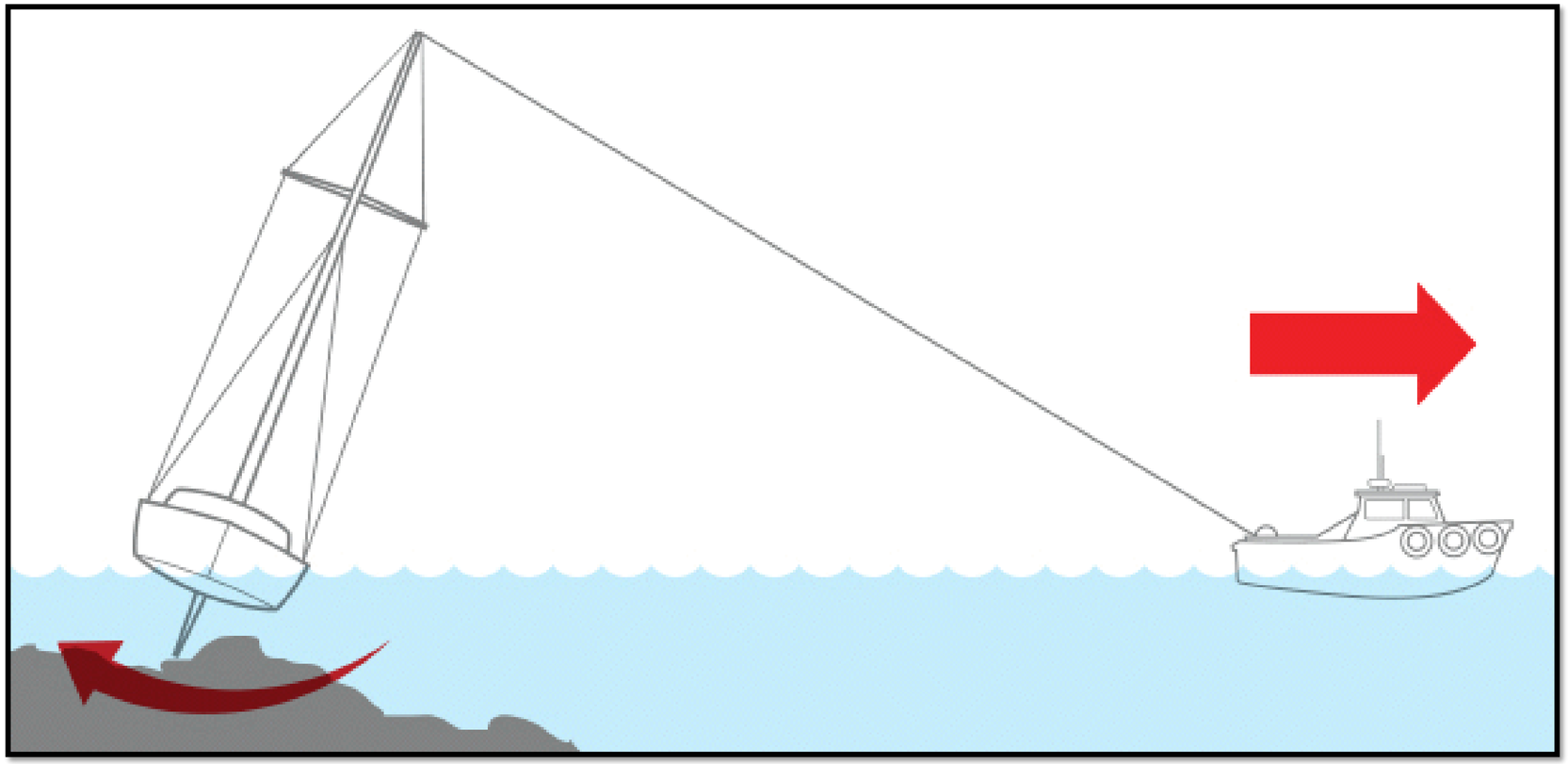
If you are stuck on a soft, muddy bottom during low tide, your boat will simply float off as the tide rises.

You can also try and dislodge your boat using your sails and crew to heel the boat. **You can get crew members to sit on the boom and swing it to the side of the boat, tilting the boat enough to raise the keel off the bottom.**

In other situations, you may need to get the assistance of a passing boater or commercial towing service to tow you off of where you have run aground.



RUNNING AGROUND



To avoid running aground, make sure to check nautical charts prior to sailing to familiarize yourself with shallower waters and their depths during low tides.

KNOCKDOWNS

A knockdown is when a boat heels so far over that one of its spreaders touches the water. This usually happens when a boat has been carrying too much sail for high wind conditions, and can be avoided by shortening sail. Knockdowns can also happen due to sailor error. Most knockdowns can be recovered from without serious consequences.

To recover from a knockdown:

- Release the sheets and the boom vang so that the sails are not pinned below the water.
- Get the crew up onto the windward rail to shift weight onto the opposite side.
- If the rudder responds, steer into the wind until the sails luff.

KNOCKDOWNS

A knockdown can sometimes cause the sailboat to fill with water, particularly if the hatches have been left open. This is called **swamping**. If your boat becomes swamped:

- Release the sheets and lower the sails so that the boat is stopped and under control.
- Bail with buckets and bilge pump.

SINKING

In extremely rare cases, your boat may have taken on so much water that it is in danger of sinking.

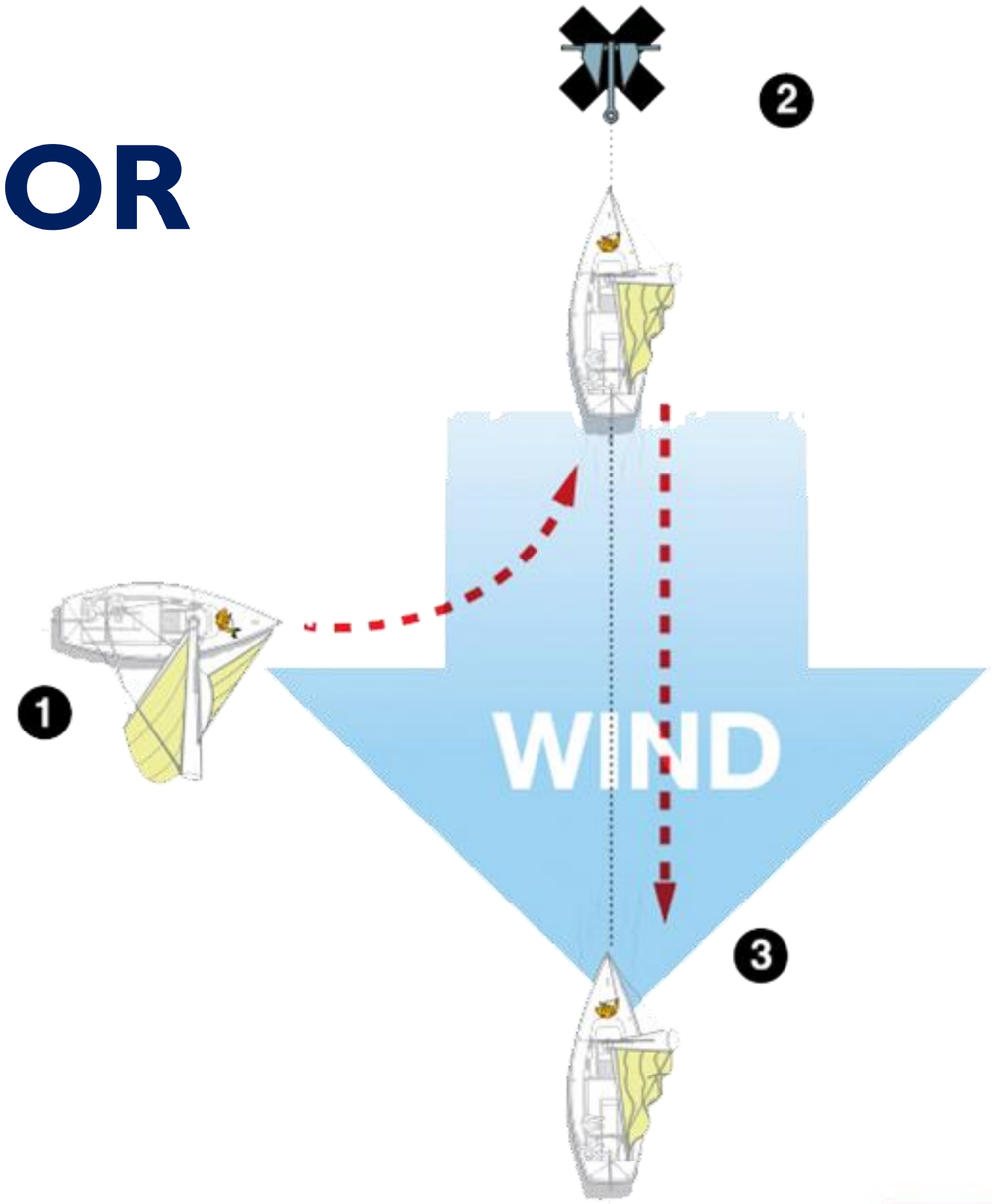
If this happens:

- Call MAYDAY on VHF radio.
- Make sure everyone is wearing a lifejacket.
- Bail with buckets and bilge pump.
- If the boat has a hole in it, try to find the leak and plug it.
- Try to sail to shore and run the boat the aground before it sinks.
- If the boat becomes completely swamped and it looks like it will sink, DO NOT leave the boat. Let it leave you by going down.
- Make sure you are not tangled in any lines.

PREPARING TO ANCHOR

1. Before anchoring, take down and stow the jib.

2. Once the jib is stored, make sure the foredeck is clear except for the anchor and its line, which is called "**the rode**." The rode should be coiled neatly on the deck so it can run freely. If there is a pulpit, ensure the anchor and rode will run smoothly under it.

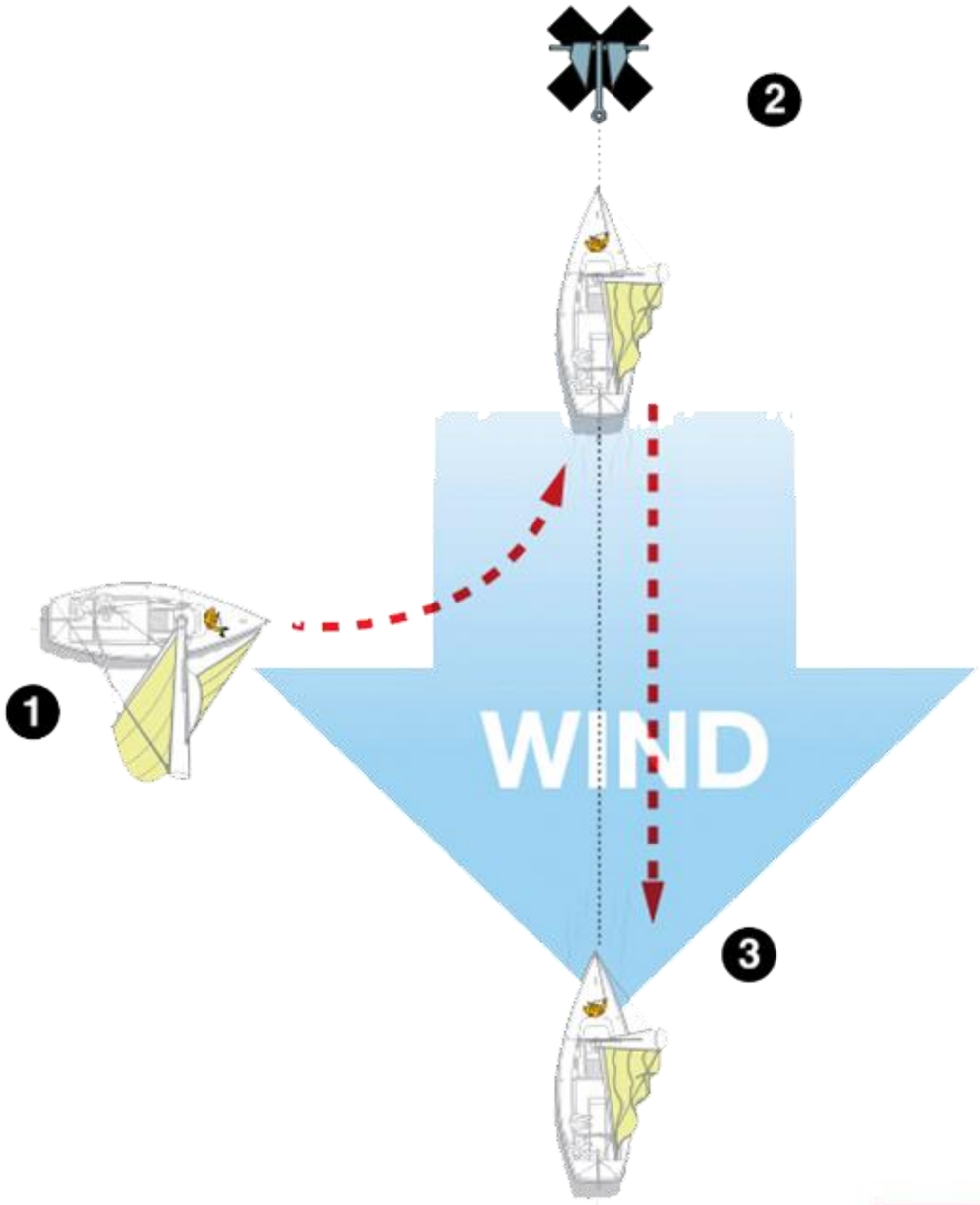


ANCHORING

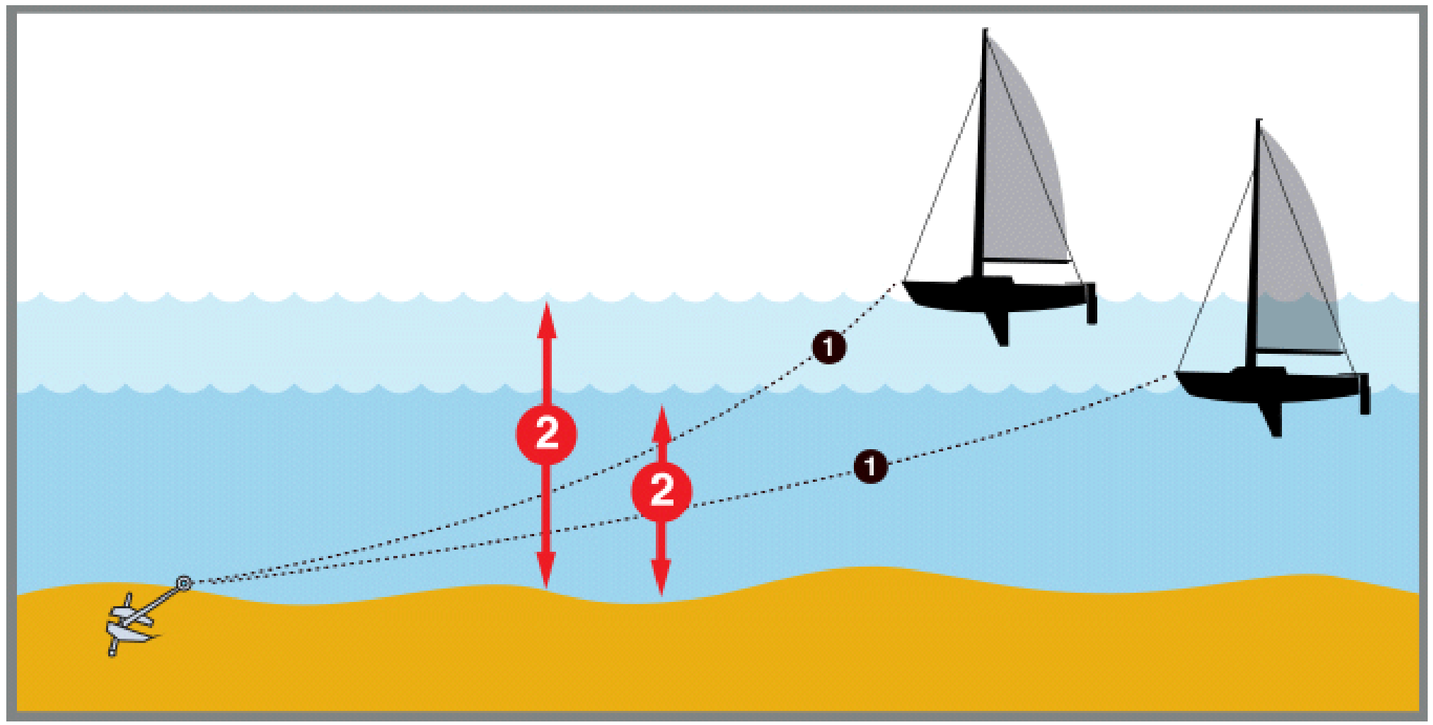
1. Sail on a reach, 3-6 boat lengths downwind of where you want to drop your anchor. When directly downwind of where you want to drop, head up into the wind causing your boat to come to a stop.

2. Once stopped, lower (do not throw or drop) the anchor. After the anchor hits bottom, pay out the rode as you drift back.

3. When you have reached the spot you want to stop, cleat off the rode. Check for adequate scope and that your anchor is holding. Then lower the mainsail.



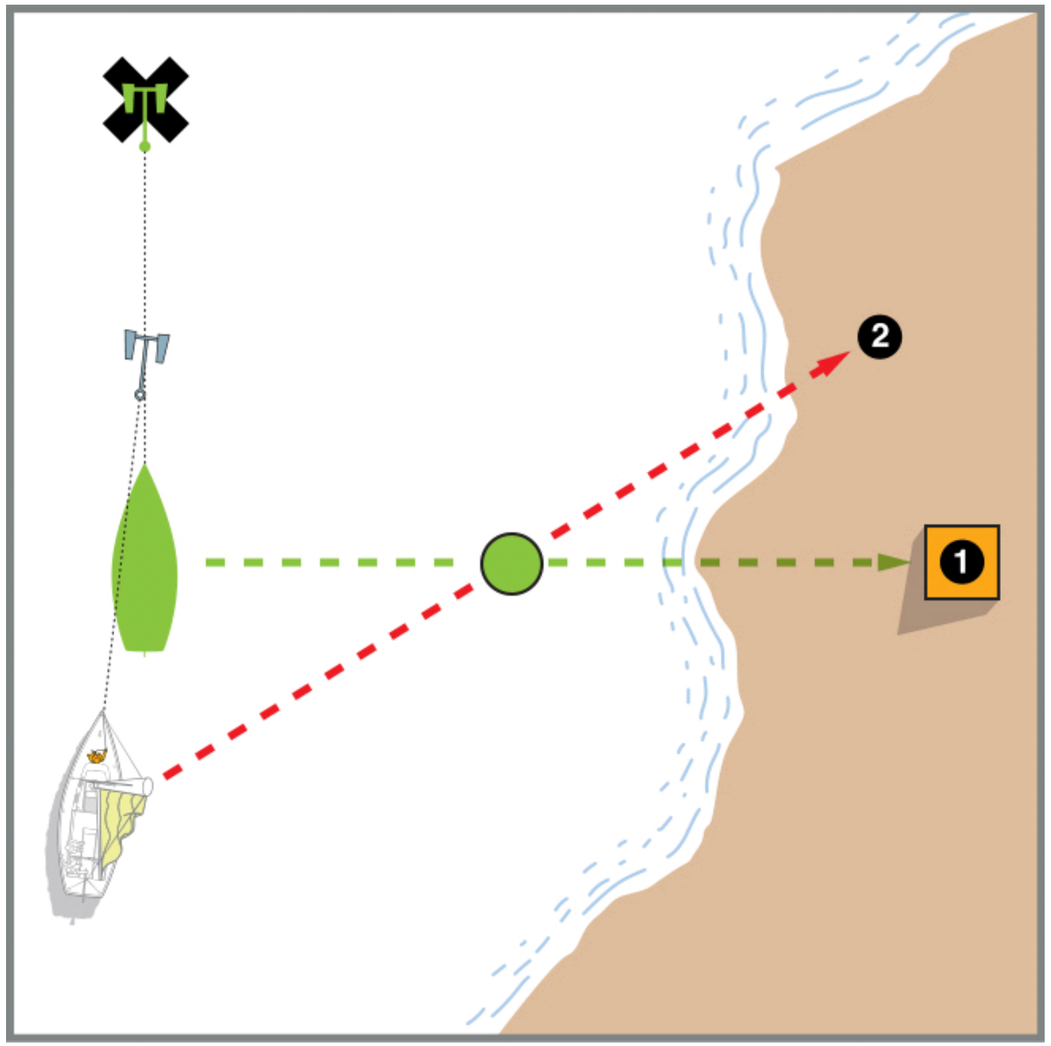
ANCHORING - SCOPE



Scope is the term for the ratio of the rode to the depth of water, plus freeboard and tidal change.

A scope of 7:1 is the rule of thumb. To calculate the length of rode, you will take your depth of water, plus your freeboard and the tide change and then multiply by seven.

ANCHORING – ENSURING A SECURE HOLD



An easy way to tell if your anchor is holding is to sight two objects that are aligned, such as a buoy and a house.

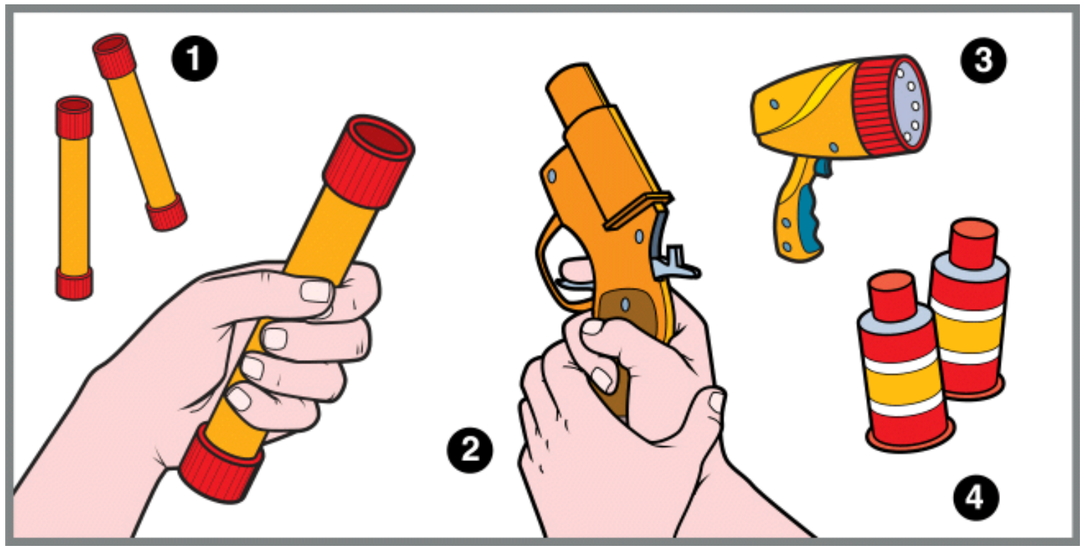
Both objects can be on shore, such as a fence post and telephone pole, but do NOT use another boat as one of your objects.

If the two objects you have sighted stay aligned, then you have a good hold.

SIGNALING FOR HELP

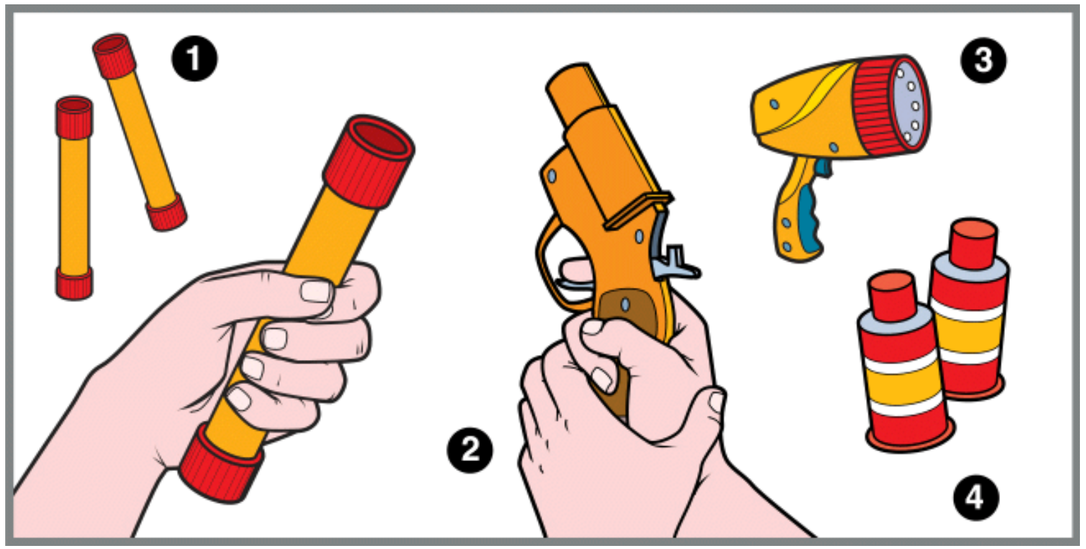
The following signals, which can be used separately or together, are recognized by the U.S. Coast Guard and the Navigation Rules:

- A smoke signal giving off orange-colored smoke
- A rocket parachute flare or a hand flare showing a red light
- Rockets or shells, throwing red stars fired one at a time at short intervals
- Flashlight or other device signaling SOS (dot-dot-dot, dash-dash-dash, dot-dot-dot) in Morse Code



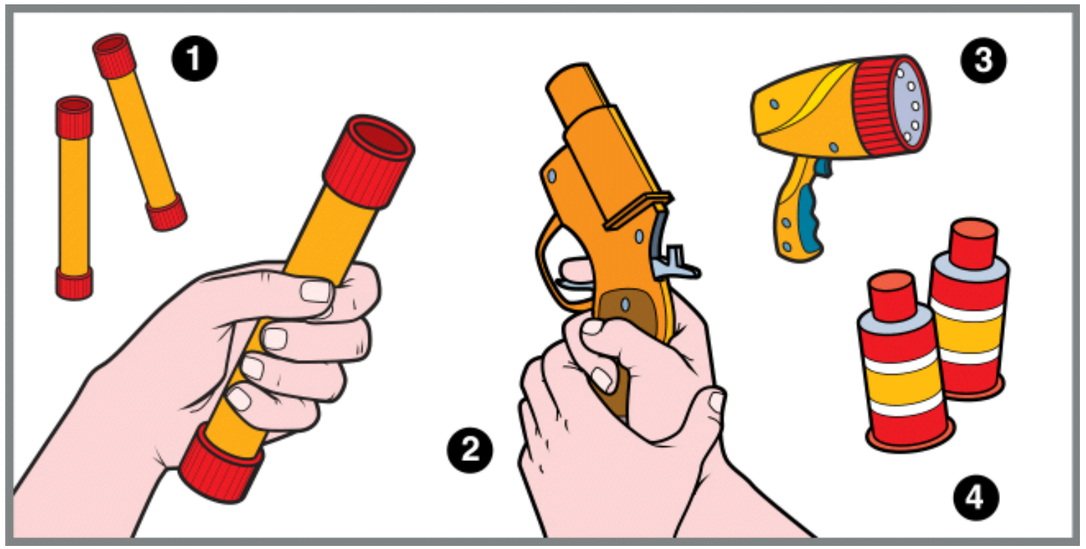
SIGNALING FOR HELP

- Continuous sounding of a foghorn
- Flames, such as a fire in a bucket or barrel
- *"Mayday"* spoken over a VHF Radio
- A signal consisting of a square flag having above or below it a ball or anything resembling a ball
- Flying the international code flags or signals "N" and "C"

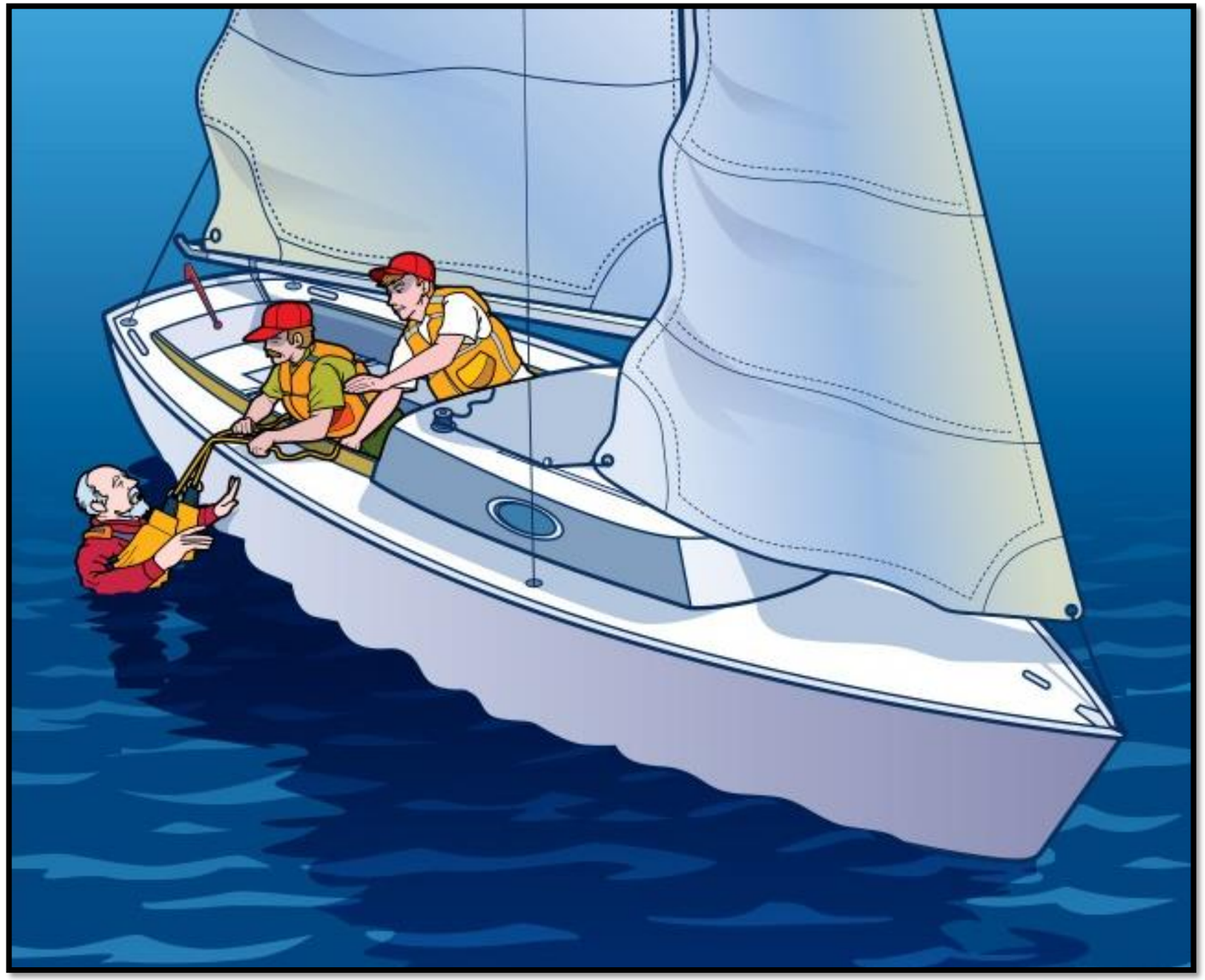


SIGNALING FOR HELP

- Firing a gun or other explosive device at intervals of about a minute
- Slowly and repeatedly waving both outstretched arms
- A high intensity white light flashing at regular intervals from 50 to 70 times per minute
- A radiotelegraph or radiotelephone alarm signal
- Signals transmitted by an Emergency Position-Indicating Radio Beacon (EPIRB)



REVIEW



UNIT SUMMARY

TOPICS COVERED

- What basic safety equipment is required on board
- Types of exercises you can do to prevent injury
- How to identify and treat hypothermia and heat stroke
- Two methods of rescuing an overboard crew member
- How to shorten your sails to manage high winds
- Anchoring techniques
- Ways of signaling for help