

Rowing in cold water conditions – Taking sensible precautions

(A précis of the longer 10 page document available on Globe website. Essential reading for all members)

Introduction

1) Cold can pose a risk to rowers all the year through. When rowing in winter, the cold can adversely affect individuals even if it is dry. Rain and wind (or a wet rower exposed to the wind) can produce significant body heat loss in much milder temperatures.

2) Hypothermia is when the body core temperature is reduced to 35°C or below (normal core body temperature is 37°C) and is a serious, possibly fatal condition.

3) The onset of hypothermia may be insidious and, as the body core temperature gradually falls, the early stages can go unnoticed by both the victim and those around them. Vigilance is required to spot the early signs, as once it is obvious someone has a problem it may have already reached the life-threatening stage.

4) In contrast, immersion in cold water is an obvious event, which should immediately raise awareness of the risk of hypothermia. The rate of onset of hypothermia in water is affected by several factors and is thus variable from person to person. It may occur quite rapidly. Because of these variable factors, tables showing survival times at defined water temperature can be misleading.

5) In **cold water** immersion, you cannot get warmer by physical activity at any stage. The opposite is true – any body movement increases heat loss and makes you colder, hastening the onset of hypothermia. This is because cold water conducts heat away from the body more efficiently - 25 to 30 times faster than in air at the same temperature.

- Make sure your boat is fully buoyant, and in good order. Consider taking something in the boat to bail out cold water following a bad wash.
- Know and understand local collision avoidance and navigation rules.
- In low light conditions try to wear white/reflective clothing. No member may row club boats in bad light (including fog) or dark conditions. When phoning PLA before an outing members must abide by any instructions in this regard.
- Know and understand local hazards in the water. Remember, once you are in cold water your life is at risk.
- Whenever possible **stay in your boat** if you are swamped (wellington boats can be useful to bail out water from the boat) and try to get as much of your body out of the cold water.
- There is much you can do to take sensible precautions. You have to accept that it may actually happen to you – it won't always be someone else who falls into cold water.

Wear the right kit

Rowing kit has to be a compromise between what will keep you comfortable when rowing in the boat, and what will help prevent heat loss when in the water. Here are some pointers:

- Several layers of light clothing will help trap a layer of water (and possibly some air), thus reducing heat loss.
- A layer of breathable but waterproof fabric will be much more efficient at trapping a layer of air and water.
- 50% of heat loss is from the head. A waterproof hood stowed in a garment collar, which can be quickly pulled out with one hand, would be of benefit. If this is bright and reflective it would also help potential rescuers to see you in the water.
- Clothing should be close fitting, to reduce the risk of it being caught on equipment etc., and to reduce drag if you need to move about in the water.

But I can swim, won't that help?

Your ability to swim and stay afloat in warm water actually bears no relationship to your ability to swim in cold water. Why is this? Apart from the effect of waves and current, your ability to swim, or just to stay afloat, is affected by several things e.g. the state you're in before immersion, cold shock, "swimming failure" and hypothermia. All of these can be controlled or mitigated to some degree – so get the knowledge and be prepared. The decision to swim for self-rescue without holding on to a boat must only be the last resort when there is a fast flowing tide unless the boat has broken up or there is little prospect of quick rescue from any quarter.

How should I prepare myself physically and mentally to survive in cold water?

2) Don't boat when you are not feeling 100% well

You are probably already aware that rowing when you are ill, fatigued, or affected by alcohol or "recreational" drugs means you will not perform well. It also means that you are more likely to get into trouble, and will be less able to cope with it when it happens.

3) Have a realistic idea of what you can do

In cold water simple manoeuvres in the water are much harder than you might imagine. The effort involved in righting the boat will hasten hypothermia and significantly reduce your survival time. It is often better instead to just pull yourself onto the upturned hull to get as much of your body core out of the water and await rescue.

4) Plan your own rescue

- Before each outing take a moment to think through how you would be rescued or self rescue if you ended up in the water at this time, from this boat, with these people and in this location? If you already have a mental picture of what would be the best thing to do if it does happen, then after the normal initial panic you will quickly feel more in control – and this is crucial to increasing your chance of survival.
- This is akin to personal “risk assessment”: For example, ask yourself is this boat fully buoyant and in good order? Is there a safety launch in attendance? If so, will it be of any use? Is the rest of the crew safety aware? Will there be someone around to summon help if necessary. What are the banks like – could you climb out? Is it just too cold to risk it in this particular location? If going out alone (not recommended) does someone know you’re on the water and know when to expect you back?
- Metal launches are not at all suitable for use as safety / rescue boats. It is often difficult to pull rowers out of the water onto a launch, especially a metal monohull-type, when the launch itself may capsize as the weight of the rower and rescuer acts on one side. The launch may become unstable or unbalanced with additional passengers on board, especially in windy or choppy conditions. Many rowers mistakenly believe that any accompanying launch will be able to rescue them if necessary, and may therefore wrongly count the launch as part of their personal safety assessment and plan.

The Hazards of Cold Water Immersion – and how to cope with them

1) Cold Shock (max risk at 1- 5 minutes in the water)

Cold shock is an increased respiratory response to cold water immersion. At first there is an involuntary gasp (indrawing of breath) which is followed by hyperventilation (rapid and disordered breathing). There is usually an associated degree of disorientation, so for a few moments you may not be sure which way is up, or where you are in relation to the boat, the bank etc.

For those first crucial few minutes just completely concentrate on not drowning! It may sound too simplistic, but if you are expecting the cold shock response, and you understand it will soon pass, then you have a better chance of surviving it.

If the first involuntary gasp takes place when your face is in the water, then you will get a lungful of water instead of air.

After your breathing begins to settle, and you get your bearings you will then have time to assess the situation and decide what is best to do for rescue.

2) Swimming Failure (risk increasing with time in the water)

Your ability to swim is reduced in cold water. The colder the water the more your swimming deteriorates. This effect takes hold long before there is significant cooling of the body core, so is not due to core hypothermia.

Swimming stroke length is decreased and stroke rate is increased – so the stroke becomes less and less efficient, and more exhausting. The swim angle is increased, i.e. your body lies more upright in the water, so forward progress with each stroke is reduced. It becomes more and more difficult to straighten the limbs and to co-ordinate swimming movements. The fingers splay and start to flex. These effects are thought to be due to local cooling of the limb muscles. The World Rowing Association, 'FISA' recommends the universal use of lifejackets when boating on water below 10°C (Minimum Guidelines for the Safe Practice of Rowing, Dec 2005)

3) **Hypothermia**

- Hypothermia is defined as body core temperature below 35°C (normal body temperature is 37°C). The body tries to **generate more heat** by shivering, which may start when the core temperature is only 1°C below normal (i.e. at 36°C). As hypothermia develops (at 35°C) the shivering becomes intense and can no longer be stopped voluntarily. However as core temperature reduces to around 33°C shivering is no longer effective, so it reduces and stops.
This is an important sign indicating the person is in imminent danger. Body heat loss then accelerates.
- Hypothermia can kill even after the victim has been rescued from the water. Before core hypothermia sets in there are the more immediate effects of local cooling of the limbs to contend with. This reduces grip strength and manual dexterity, and reduces the ability to feel with the fingers. This effect can occur very soon after immersion, and may severely hamper survival actions, such as clinging to the boat.

How can I reduce the risk?

- Once you have recovered from the cold shock effect and have got your bearings, the most important priority is to get as much of your body as you can out of the water as quickly as possible, and then to cover your head, which accounts for 50% of body heat loss.
- You could pull yourself onto your (possibly upturned) boat, or onto any other likely nearby object in the water. If this is not possible, then hold onto anything which floats and will give you some support – this will usually be the boat. If you are unable to get out of the water then the next priority is to stay as still as possible in the water, with your back to the waves to avoid water inhalation.
- If you are wearing a Personal Flotation Device (PFD) then you will probably be able to adopt the Heat Escape Lessening Posture – basically the “foetal position” – cross your arms across your chest, keeping the elbows close to your sides, and then draw the knees up to the chest. This gives added protection to the body areas of high heat loss i.e. armpits, groin and chest.

What to do when rescuing from water and after a rescue?

A victim who has been in cold water for any length of time should be lifted out in the horizontal position to prevent circulatory collapse. They should be treated with the utmost gentleness to avoid precipitating a cardiac arrhythmia. They should be kept as still as possible.

- Once sheltered, limit the victim's physical activity, and make them lie down, keep still and be wrapped up while awaiting transfer to hospital for full examination.
- If the victim has reached warm dry shelter, remove any wet outer clothing and wrap in dry layers and a thermal blanket.
- If the victim is still outside, do not remove wet clothing. Quickly wrap in extra layers and a thermal blanket (each launch bag will have such blankets).
- DO NOT attempt to actively warm the victim i.e. do not rub or massage muscles, do not apply direct external heat, especially to the extremities. Active rewarming should only be done in hospital as dangerous side effects may occur.
- Get them to rest and take food (fuel to increase body heat production) and **non-alcoholic, caffeine-free drinks** (to correct any dehydration). Remember that alcohol dilates blood vessels in the extremities and promotes further heat loss. Caffeine is a cardiac stimulant, and may increase the risk of heart rhythm disturbance.
- If medical assistance is significantly delayed, then body to body contact is relatively safe and can be very effective.
- Keep watch for, and warn victims to report any signs of a drop in blood pressure. This may occur if the blood vessels to the extremities open up too quickly. The first sign would be feeling faint or dizzy. If affected get the victim to lie down and temporarily remove a layer or two. If symptoms persist in spite of this, call for an ambulance for transfer to hospital.
- At the earliest opportunity, call for an emergency ambulance to transfer the victim to hospital.

Do you suspect Hypothermia? – then get them to a hospital fast!

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