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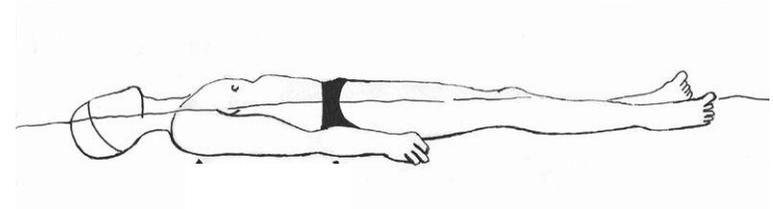
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Reducing Death from Drowning - Worldwide

FLOATING



A guide for Swimming and Lifesaving Teachers

Written by John Connolly B.Ed, MA in Ed., FIST
in association with the FLOAT - DON'T SWIM project, 2006.

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INTRODUCTION

The aim of our **FLOAT - DON'T SWIM** leaflet is to draw attention to the fact that a number of swimmers drown annually because they attempt to swim to safety immediately following a fall into cold water instead of floating for a few minutes first to settle the breathing problems associated with **COLD SHOCK**. This booklet is designed to provide swimming and lifesaving teachers with more information than that contained in the leaflet and to offer suggestions on how they might introduce new swimmers to the survival skills of floating and sculling.

FLOAT - DON'T SWIM

If you fall into water and cannot stand up or climb out immediately, float on your back.

1. Most people, who drown accidentally, fall into cold water.
2. When cold water touches our skin, it makes us gasp and breathe very quickly - this is called **COLD SHOCK**.
3. Breathing at this rate makes it difficult to swim; even good swimmers have been known to drown while trying to swim 10 metres in these circumstances.
4. It is better to float for 3 to 5 minutes, with your head out of the water if possible, before deciding what to do next.

John Connolly B.Ed, MA in Ed., FIST

John Connolly is a retired primary school principal with over 30 years of experience as a swimming and lifesaving teacher. He is a Fellow of the Institute of Swimming Teachers and Coaches and has been a Royal Life Saving Society Lifesaving and Lifeguard Tutor (NTA) since 1980. He has been Honorary Chief Executive of the Irish Lifesaving Foundation since its establishment.

Body text by John Connolly
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This sculling action can be used to maintain a horizontal or diagonal floating position with the head out of the water. If a leg kick is added the swimming action can be used to maintain a horizontal or diagonal float with the head out of the water. Sculling with gentle kicking is an important survival skill that is easily learned. Sculling can be a crucial survival skill in cold water immersion. It may be necessary to kick the legs slowly to maintain a flat body position, especially when the swimmer is fully clothed. Swimmers should practise moving on their backs while keeping the hands underwater as this will enable the person to move towards safety without risking further breathing problems.

CLOTHING

The majority of those who fall into water are wearing clothing at the time. Air trapped inside clothing may provide some helpful extra buoyancy in the early stages of an immersion so they should not be removed immediately. Try to minimize any movements to retain the trapped air for as long as possible. Heavy shoes may drag the legs down and should be removed if they do so. It may be possible to lever off the shoes without putting the face into the water. If you cannot climb out of the water immediately do not attempt to swim until the cold shock induced breathing difficulty eases. Trapped air will increase buoyancy for a short time making it easier to float until the cold shock wears off.

To avoid cold shock all swimmers, especially children, are advised to enter cold water slowly and to remain within standing depth for a few minutes until they get used to the cold before attempting to swim.

Accidental water entry

Most of those who drown accidentally fall into cold water unexpectedly, often fully clothed. Drowning deaths occur day and night, in every month of the year, in waters that seldom rise above 18 degrees centigrade in summer and frequently fall below 5 degrees centigrade in winter.

Intentional water entry

A number of drowning deaths also occur in swimmers in the spring/early summer months, particularly among children, while attempting to swim short distances in water that is cold. A minute or so after starting to swim, they unexpectedly experience the “Cold Shock” response and it’s associated incapacitation and panic, often resulting in drowning if they are out of their depth at the time. People who swim in open water all the year around are usually immune to this response.

Cold Shock

When large amounts of cold water touch our skin, we gasp and develop very rapid breathing. This is a reflex act (like sneezing) that we cannot stop. As a consequence, at this time, we can inhale water quickly, possibly resulting in drowning. The name given to this reflex response to immersion in cold water is COLD SHOCK. After 3 minutes your breathing will gradually settle as the sensation of cold diminishes.

Panic

The surprise of an unexpected fall, combined with the physical effects of Cold Shock, can disorientate even good swimmers. The sudden effect of the cold on your skin, coupled with the intensity of the breathing response which feels as if you are not getting enough air to breathe, generally causes panic. Attempts to swim at this stage will add to the panic. The rapid shallow breathing will also reduce the amount of oxygen available to your muscles.

Immediate life-saving action

If you experience Cold Shock, float on your back with your face out of the water, concentrating on trying to slow your breathing and relaxing until the cold shock effect reduces in it’s intensity. Your breathing rate will slow down in about 3 minutes as the intensity of the cold fades. At this stage, you have survived the worst and it is time to assess your situation and decide what to do next.

Buoyancy

Your first objective is to continue to maintain your airway clear of the water. Grab hold of any adjacent aid that may help support the body. Air may be trapped inside clothing so don't remove it; minimizing movement will also help retain trapped air for as long as possible. Wet clothing will make it more difficult to swim but does not weigh swimmers down in water. Heavy shoes should be kicked, or levered, off one at a time while floating on your back.

Next Step

While continuing to maintain your airway clear of the water shout and wave, if appropriate, for help. If no response is obtained, consider swimming a short distance to shore, if viable. Better to propel yourself with your legs while floating on your back to reduce body heat loss and increase your chances of surviving.

People at risk

Children, the elderly and thin people are very susceptible to cold and tend to cool very quickly in cold water. However, everyone is susceptible to cold shock except those who are used to cold water, and therefore habituated. Everyone at risk are therefore advised to enter cold water slowly and to remain within standing depth for a few minutes, allowing their bodies to adjust to the cold before entering deeper water. Failure to do so has frequently resulted in drowning.

Summary

Cold shock is a very common cause of drowning in cold water. Don't go out of your depth until you get used to the water temperature. If accidentally immersed, floating on your back enables you to breathe, think and shout for help during the first crucial minutes of an immersion. Attempting to swim, in the first 3 minutes before your breathing has settled down, increases your chances of becoming another drowning statistic.

Floating

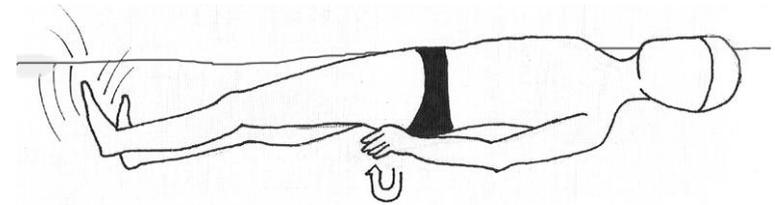
Almost everyone can float and most people can learn to float on their backs with their faces out of the water. There are a small number of individuals who cannot float because they have too much muscle or large bones or too little fat on their bodies. As long as the weight of the water displaced by the floater is heavier than their own weight they will float. Breathing in and breathing out changes our buoyancy. Air is lighter than water so the more air we have inside our bodies the higher in the water we float. Women usually find it easier to float than men. Nervous people are tense and this expels air from their lungs thereby reducing their buoyancy. **It is very important, when starting out, to convince swimmers that they can float.** The following exercises will help to do this with most people.

SEA FLOATING

Sea water is cold and salty and therefore denser or more buoyant than warm fresh pool water. This means that almost everyone can float in it. Persons who can only float with difficulty in a pool will float easily in the sea. It is important to stress this to those experiencing difficulty floating in a pool.

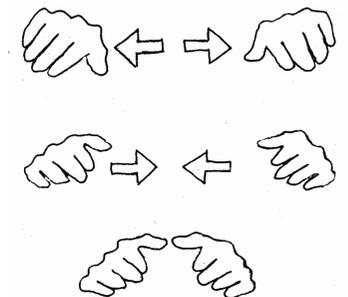
COLD SHOCK

Anyone falling into cold water will experience serious breathing difficulty for a short period. This condition is called cold shock and has nothing to do with swimming ability. Even very good swimmers will have breathing problems if they attempt to swim before their breathing settles down. Cold shock passes quickly within two or three minutes. If someone falls into cold water and cannot get out immediately they should float until the cold shock passes. It may be necessary to scull in order to breathe without difficulty.

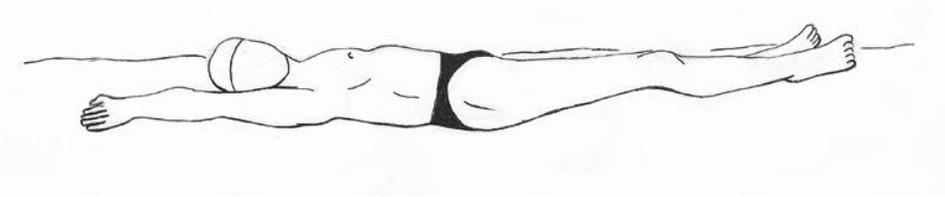


SCULLING

Sculling is a very useful skill to help maintain a horizontal body position, or even to tread water, in difficult circumstances e.g. wearing clothing. The hands should be kept by the side with palms facing downwards. The little finger sides of the hands should be raised so that the hands are at an angle (45 degrees) with the little fingers up and the thumbs down. The hands should be swept out until the elbows are straight. The tilt of the hands should now be changed so that the thumbs are up and the little fingers up and the hands swept back into the sides where the tilt is changed again and swept back out again. The hands should be flat, not cupped and fingers kept together. The movement should be smooth and continuous.



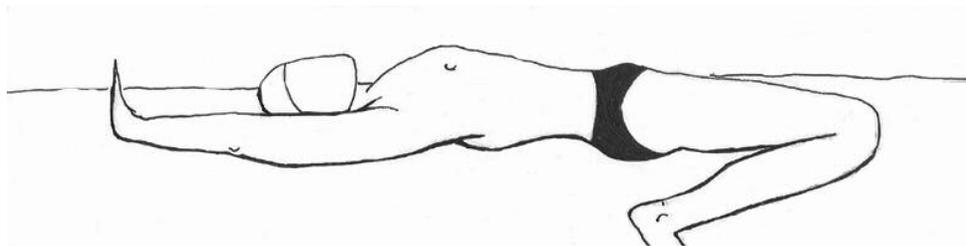
If bobbing is a problem an assistant may be used in the beginning to support the shoulders of the floater. Once the bobbing stops the help is removed slowly. If the floater believes that he will stop bobbing he will relax thereby increasing his buoyancy. Lifting the head to look at the toes may help to raise slowly sinking feet. An assistant supporting the floater's feet will help novices achieve a flat back position after which the support should be removed slowly.



HORIZONTAL FLOATING

Vertical and diagonal floaters will need to move their centre of gravity and centre of buoyancy closer together if they are to achieve a horizontal position. Dropping the diaphragm (breathing from the stomach) will move the centre of buoyancy but it is much easier to move the centre of gravity closer to the chest by opening the legs wide and stretching the hands behind the head. The floater assumes an **X** shape or an inverted **Y** shape with the legs open and the hands together behind the head.

If someone still has difficulty bringing the thighs to the surface they should bend their knees bringing their heels up under the buttocks and finally bend their wrists lifting their hands out of the water thereby making them heavier due to the resultant loss of water support. The back should not be arched but left flat in the water



Again, once a horizontal position has been achieved breath holding, it will be necessary to practice explosive breathing in order to maintain it for any length of time. If you imagine the body as a see-saw with the legs down then you will have to move weight behind the head to lift them up.

a) SITTING ON THE POOL BOTTOM

In the shallow end ask the class to take a deep breath, hold their breath and their noses and sit on the bottom of the pool. They should find this difficult to do stating that the water keeps pushing them up.

STRESS: THE WATER PUSHES UP.

Tell them to exhale, hold their breath and nose (don't breathe in) and sit on the bottom. They should now be able to do so relatively easily. Point out to them that **the amount of air we have in our lungs affects our buoyancy.**



b) MUSHROOM FLOAT

In water somewhere between waist and shoulder depth ask the class to

- i) take and hold a large breath.
- ii) bend the knees and lean forward placing the head in the water.
- iii) relax and lift the legs off the bottom holding them up by the knees

Most relaxed swimmers will bob up and down and then settle down floating with a part of the back out of the water. If someone sinks ask them to take a larger breath and try again. Nervous people are tense and this results in exhalation and a consequent loss of buoyancy. Tense your own muscles and you exhale unless you consciously prevent it. Encourage them to relax while they are floating. I want to stress again that it is very important to convince your pupils that their bodies are buoyant. Once you succeed in this what you are doing is teaching them to float on their backs with the face out of the water. Persons who continuously sink most likely belong to the small group of non-

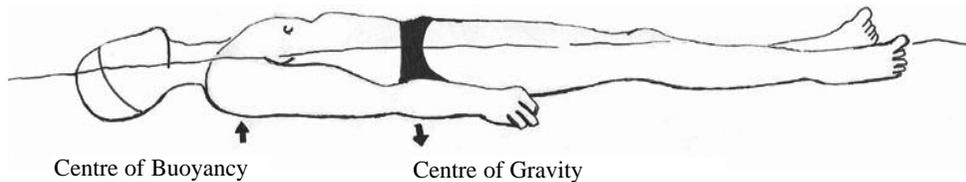


c) DEAD MANS FLOAT

Take your class into chest deep water and ask them to repeat the activity but this time to gradually lower their legs until they are hanging under the body. They should understand that once they hold a deep breath and put their face in the water they will float. Breath control is important in floating.

d) BREATHING

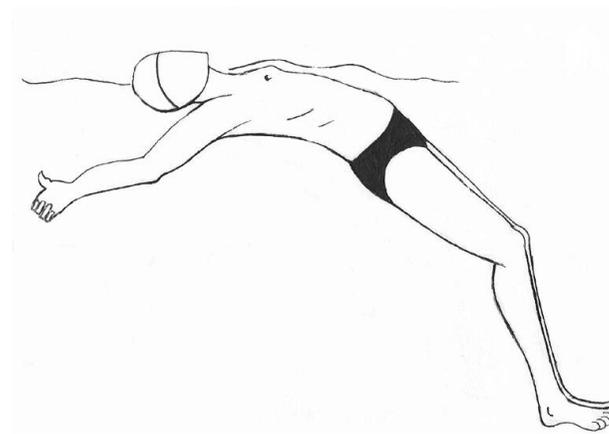
Swimmers need to learn how to take and hold a deep breath while submerged. Initially individuals may only be able to do this for a few seconds but with practise they can learn to hold a breath for at least 30 seconds and usually for much longer once they are relaxed. Ordinary, everyday breathing is caused mainly by the descent of the diaphragm. Floaters should attempt to retain this practice breathing by dropping their diaphragms instead of lifting their ribs - as this raises the waist in the water and reduces the sinking of the feet. Experienced floaters take frequent shallow breaths using the diaphragm only. Attempts should be made to reduce a hollow-back arch by relaxing the back muscles; a flat-back position makes it easier to raise the legs.



GRAVITY AND BUOYANCY

A persons weight acts through a point called the Centre of Gravity which is situated around the hips in a horizontal body with the hands by the side. Buoyancy acts through a point in the chest called the Centre of Buoyancy. We float motionless when the Centre of Gravity is directly under the Centre of Buoyancy. This is why floating vertically is easy and we have to work to float horizontally. If a person of average weight lies flat (on their back) on top of the water with the hands by the side gravity will pull the person downwards through the hips (heavy legs) whilst the buoyant force of the

water will push the chest upwards. The legs will start to sink, rotating the person forward until the hips are directly under the chest. Unfortunately the momentum of the sinking legs often pulls the whole body underwater. This can be very upsetting for beginners so it is best to start face up floating instruction in shoulder depth water.



FACE UP FLOATING

In shoulder depth water the pupils should lean their heads backward until the back of the head is in the water. Their arms should be extended straight out from the shoulders and the back arched. After taking a deep breath the arms should be slowly moved back behind the head. The feet will leave the bottom by themselves and rise to the natural position for each person. The natural floating position varies so your pupils may settle down floating in a diagonal, vertical or a horizontal position. Some pupils may find it necessary to kick their legs slowly to maintain a comfortable floating position. Once they can do this, stress **that they can now float face up**. Get them to practise this a number of times concentrating on their breathing. Some water will most likely wash across their faces and they may bob up and down; tell them to hold their breaths and ignore these, they will quickly pass.

Very buoyant floaters can remain motionless using shallow breathing but most swimmers will gradually sink if they slowly exhale so they need to practise exhaling and inhaling quickly- explosive breathing. As their confidence grows they will relax and become more buoyant. If some have difficulty keeping the face out of the water they may have to stretch their hands further back behind their heads. Bobbing, with the resultant water over the face, will occur if the sweeping back of the hands is done too quickly.