

# Water Safety

## (Incorporating Life Jackets and

## Buoyancy Aids)



### Introduction

This is the fourth edition of the factsheet, which updates that coded FS120603, dated 5/98.

Further editions may be issued in the light of experience from this edition. Publication of further editions will be notified in SCOUTING Magazine, *Talking Points* and Activities Newsletter.

### General

An awareness of the possible dangers associated with water activities should not be allowed to interfere with the challenge associated with these activities. Proper training in the background to the dangers and self help techniques of survival can help to eliminate or minimise the dangers.

### Cold water immersion

Cold water can kill in several ways. These can be explained under two headings - short term and long term immersion.

#### Short term cold water immersion

The main problems that are associated with this form of immersion involve the circulation of the blood and the breathing system.

When a person drops into cold water, the blood vessels nearest to the skin constrict and the blood pressure in the body core rises rapidly. Together with an increase in heart-rate due to the alarm felt by the person, this can lead to heart failure in some people. On rare occasions this can happen to apparently healthy young people.

The second type of response is that where immersion is accompanied by big involuntary gasps. During this period a person can be inhaling and exhaling up to five times the normal volume of air. This greatly increases the possibility of inhaling water and drowning. A complication is that, during this process, the level of Carbon Dioxide in the blood is reduced and fainting can occur. An unconscious person is more likely to inhale water and drown. The changes in blood chemistry involved increase the possibility of muscle cramps, and decrease the ability to survive.

In order to minimise these effects, one should attempt to enter the water as gradually as possible, and consciously attempt to control the breathing rate. The more clothing and insulation worn, the greater chance of avoiding these effects and surviving.

#### Long term cold water immersion

In general those people accidentally immersed in cold water, who have some sort of flotation device (life jacket or buoyancy aid), do not die as a result of the short term problems discussed above. The danger in the long term is the progressive loss of body-heat leading to hypothermia, unconsciousness, inhalation of water, and death (either from drowning or loss of heat).

In the average person it takes from 15 to 20 minutes for the core of the body to begin to cool. When the core temperature has dropped from the normal 37°C to about 34°C, a maximum rate of shivering by the body is reached. The heat generated by this shivering is, however, only sufficient to match heat loss in cool air and so the cooling continues. Below 35°C, experimental patients tend to lose the ability to maintain a logical sequence of ideas. This could be the

reason for the strange behaviour often noticed in hypothermia victims. The wearing of protective clothing can delay the cooling process and the onset of hypothermia by considerable amounts, depending on the degree of specialisation of the clothing. Figure 1 below shows the rate of decrease in body temperature for an unprotected person in 10°C water.

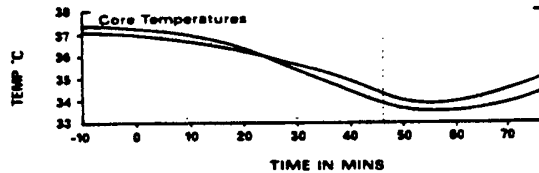
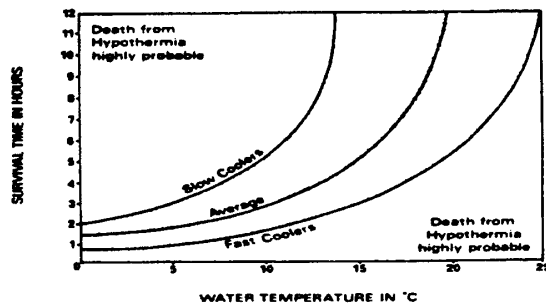


Figure 2 below shows the relation between water temperature and the time of death from hypothermia for a lightly-clothed person. It must be stressed that these figures are for a person making no effort to move in the water

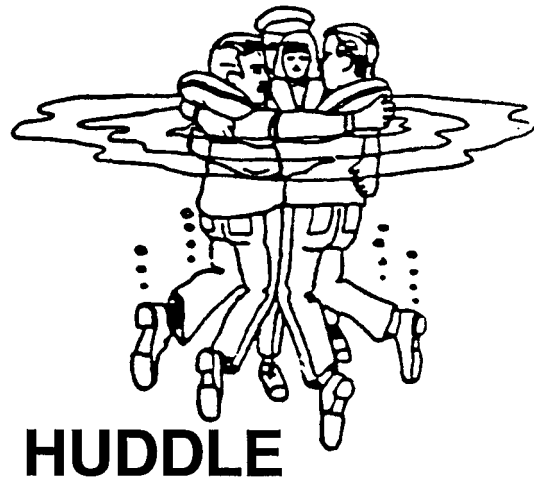


### Self help in cold water immersion

If there is any danger that a person will be in a position where cold water immersion is possible, the wearing of a life jacket or buoyancy aid and, if possible, some protective clothing, i. e. wet or dry suit, or thermal type wear, is recommended. If actually immersed, movement should be minimised. If by oneself, the adoption of the Heat Exposure Lessening Position (**HELP**) will minimise heat loss (see above right). By adopting this crouching position, the areas of greatest heat loss (the head, neck, sides and groin) can be protected.



If a group of people find themselves in cold water together, they can adopt the **HUDDLE** position. In this, the sides of the body and the lower body areas are pressed together. As well as reducing the heat loss there are advantages mentally in being together. Any young person should be placed in the middle of the huddle.



Practising drown-proofing in cold water exposes the head to the cold water, increases the rate of body cooling, and hastens hypothermia. Treading water uses up body energy which means that heat is being lost more rapidly than if simply floating in your lifejacket or buoyancy aid. Any person regularly undertaking water activities in water which has a temperature of less than 15°C, should practise H.E.L.P. and Huddle techniques regularly, so that if there is an emergency they come automatically to mind.

## Hypothermia

Hypothermia is an insidious condition that creeps up slowly on the victim. If a casualty has been immersed in cold water for more than a few minutes it is wise to consider the possibility of hypothermia. It is also possible for people involved in water activities to succumb to hypothermia just by being exposed to cold, damp conditions in an open boat, canoe or sailboard.

### Symptoms and treatment

The victim may not complain of anything more than being cold and shivering. Occasionally there may also be attacks of cramp.

Leaders are often in a better position to assess the physical state of others in the party, although their judgement may be impaired if the conditions are such that the whole party is being affected. The Leader should watch for the development of quietness and apathy, slow thinking, unexpected outbursts both vocal and physical, loss of faculties (slurred speech, blurred vision, etc.) and violent fits of shivering. All indicate that a problem is possible and evacuation from the water is advisable.

Undoubtedly, the best treatment is to minimise the possibility by ensuring that the clothing worn is suitable for the conditions. Early diagnosis of the conditions that may lead to hypothermia and curtailing the activity are better than having to treat a hypothermic patient. If hypothermia is diagnosed the first stages of treatment must be evacuation to a warm dry place. If in any doubt medical assistance should be sought. Initial treatment should include insulating the victim from further cold and supplying warm drinks with energy giving food.

### Weil's Disease

Weil's Disease is a bacterial infection carried in rats' urine which contaminates water and wet river banks. The bacteria does not survive for long in dry conditions. It can be a serious illness requiring hospital treatment, and can lead to kidney or liver failure. **Weil's Disease is a notifiable illness.** The bacteria are absorbed through the skin or mucous membranes of the mouth and eyes. It gets into the blood stream very easily if you have a minor cut on your skin or feet, if you become immersed. If you feel ill

after training - particularly in stagnant water or pools - or have any of the following symptoms, call your doctor promptly. The most common early symptoms are high temperature, an influenza-type illness and muscle pains. **Tell your doctor that you have been undertaking water activities and where and ask if you can have a blood test for Weil's Disease.**

**For early identification of the bacteria, your Doctor should be respectfully reminded of the existence of:**

***The Leptospirosis Reference Unit,  
Public Health Laboratory,  
County Hospital,  
Hereford HR1 2BR.  
Telephone: 01432 268161***

### Prevention

Prevention measures are largely common sense

- Cover all cuts and abrasions with waterproof plasters
- Always wear footwear to avoid cutting the feet
- Avoid capsizing drill or rolling practice in suspected waters.
- Where possible shower soon after the activity
- If in doubt contact your doctor as soon as possible.

### Blue-green algae

Certain species of the blue-green algae can produce toxins which, upon contact, may cause a number of conditions such as dermatitis, asthma, eye irritation, rashes, blistering of the skin around the mouth and nose, nausea, gastroenteritis, muscle cramps, headaches and pneumonia in some people. They have also caused fatalities in fish, livestock and pets

These organisms can undergo a very rapid population increase in favourable conditions (i.e. prolonged, warm, still weather and high levels of nutrients in the water such as nitrogen runoff from fertilisers used on adjacent land) and

therefore, produce very high levels of toxin quite suddenly. This is sometimes, but not always, associated with the production of a scum at the surface of the water.

**Situations where recreational water users are at most risk from toxins are:**

- Ingestion of scum on water including drinking raw water or inadequately treated water.
- Skin contact with scum or water or raw water.

**Those most at risk from blue green algae are, in order of risk:**

1. Children playing at the water's edge.
2. Swimmers.
3. Board Sailors.
4. Paddling (Canoists & Kayaks).
5. Dinghy sailors.
6. People engaged in non-capsizing type sailing or motor cruising.

Many areas of water, particularly those used by sailing clubs, will now display information about blue green algae and where high levels of blue-green algae are found, a flag will be flown to warn the public. The flag will be half blue and green with the word **toxic** across it. For other water areas contact your local river authorities or water company to find out whether blue-green algae is present.

**Other potential hazard**

*Cryptosporidium*

This is a parasite infection which is widespread in the United Kingdom. Enhanced personal hygiene should be encouraged at all times. The symptoms are an acute diarrhoea illness, commonly of two to three weeks duration from which the patient recovers fully unless there are underlying conditions.

*Hepatitis A (Infectious Hepatitis)*

Hepatitis A is a virus infection of the liver which can vary from a mild or inapparent illness to, rarely, a severe disabling disease lasting several

months. Infection has been caused by swallowing water during water sports.

The incubation period varies from two to six months after swallowing the virus. The onset of the illness is abrupt, with loss of appetite, fever, nausea, and abdominal discomfort, following within a few days by jaundice. If you become ill at any time with these symptoms, call your doctor and tell him you participate in water sports.

*Gastro-intestinal disturbance*

The commonest illness associated with water sports is mild gastro intestinal disturbance (tummy upset) which can occasionally lead to diarrhoea and vomiting. When this happens you are advised to consult a doctor. Flu like symptoms and mild respiratory symptoms may also occur, as may eye and ear symptoms. Those generally resolve rapidly without treatment.

**Life jackets and buoyancy aids**

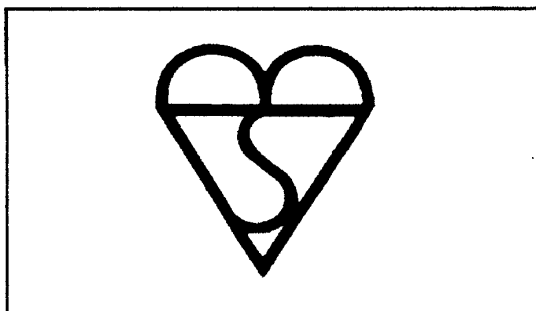
From July 1995 suppliers have only been allowed to sell life jackets and buoyancy aids that have been tested to European specifications and carry the CE mark of approval.

There is no requirement for Members of The Scout Association to replace properly maintained and tested lifejackets and buoyancy aids. All life jackets and buoyancy aids used by Members of The Scout Association must conform to one of the following standards and be marked accordingly.

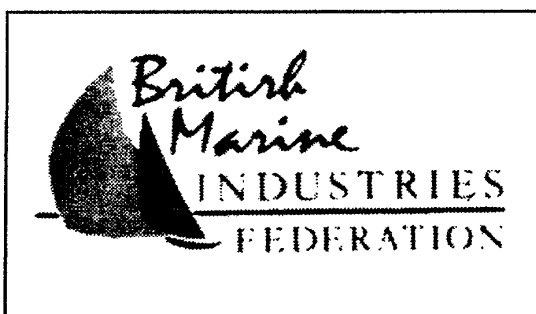
**European standard for life jackets and Buoyancy aids**



#### British standard for life jackets



British Marine Industry Federation  
for buoyancy aids



British Canoe Manufacturers Association  
for buoyancy aids



#### CE standard explained

The CE standard deals in Newtons. A Newton is a measured unit of force. 10 Newtons are approximately equal to 1 kg (2.2 lbs) of buoyancy. The CE standard covers four levels of minimum buoyancy performance. The higher the Newton number the higher the buoyancy rating. The buoyancy rating quoted is for adult size only. Smaller sizes will have proportionally less buoyancy.

#### 50 Newton (11 lbs buoyancy) - buoyancy aid

- Only suitable for competent swimmers.
- Sheltered water used where help is close at hand.

- Only provides support to conscious people who can help themselves.
- Inferior in performance to life jackets or the previous BMIF Standard for Buoyancy aids.

#### 100 Newton (23 lbs Buoyancy) - Buoyancy aid (life jacket)

- Suitable for swimmers.
- Increased buoyancy for use in general inshore conditions.
- Gives a reasonable assurance of safety from drowning in relatively calm waters.
- Not guaranteed to self-right an unconscious user wearing waterproof clothing and should not be expected to protect the airway of an unconscious person in rough water.
- Adult sizes have greater buoyancy than approved buoyancy aids previously seen in the United Kingdom.
- Classed as a buoyancy aid in the Great Britain and a life jacket in Europe.

#### 150 Newton (33 lbs Buoyancy) - Life jacket

- Suitable for swimmers and non-swimmers.
- For use in all but most severe conditions.
- Equivalent performance to existing United Kingdom approved life jackets.
- Will give reasonable assurance of safety from drowning to a person not fully capable of helping themselves.
- May not immediately self-right an unconscious user wearing heavy waterproof clothing.

#### 275 Newton (62 lbs Buoyancy) - Life jacket

- A high performance device for offshore and severe conditions, when maximum protection is required or where heavy waterproof clothing is worn.
- Has sufficient buoyancy to counteract the effect of trapped air in clothing.
- This type is new to the leisure market but similar life jackets have been available for industrial applications.
- Gives improved assurance of safety from drowning to people who are not able to help themselves.
- While they cannot be guaranteed to self-right an unconscious user wearing heavy

waterproofs, the buoyancy they provide should ensure they will in the great majority of cases.

## Maintenance

It is important that all life jackets or buoyancy aids are repaired as necessary. They should be independently inspected in accordance with County or District arrangements. If there is any doubt, the advice of the Assistant County Commissioner (Water Activities) or County or District Water Activity Adviser should be sought.

It is important that any damage to the outer skin of the life jacket or buoyancy aid is repaired immediately. Delays will only compound the damage and possibly damage the internal buoyancy material or air chambers. The annual inspection should check for any damage and for standard of repairs, particularly to stitching and zips.

A simple test for a life jacket or buoyancy aid is to hang on an appropriate weight, squeeze out all the air and see if it floats. If it does float it is OK. If it fails to float it needs replacing. (See chart on page 7)

It is also recommended that all life jackets and buoyancy aids be individually marked with an identification system and that a record be kept of the date of purchase, any repairs and the dates of the annual inspections. This will assist with the long term planning for renewal and the budget implications associated with such renewals.

## Life jacket or buoyancy aid

Where the use of a buoyancy aid is specified by The Scout Association, a life jacket may be substituted but not **vice versa**. Where a CE standard is specified, a higher specification may be substituted but not **vice versa**.

## Safety notes

All garments should be worn correctly in accordance with the manufacturer's instructions.

Proper discipline, correct training, good Organisation, use of correct facilities, qualified leadership and correct briefing are paramount for

water safety. A life jacket is no substitute for these.

## Life jacket and buoyancy aid requirements

The chart which accompanies this paper indicates the minimum level of standard of buoyancy aid or life jacket which must be worn, or carried, when undertaking activities within The Scout Association.

Where a CE 50 Newton standard buoyancy aid or CE 150 Newton standard life jacket is stipulated it is recommended that the life jacket or buoyancy aid should be tailored to the size and weight of the person undertaking the activity.

Where possible, it is recommended that an approved CE lifejacket or buoyancy aid tailored for the activity (windsurfing, personal watercraft etc) should be worn.

An authorised person in charge of an activity may, at any time, insist on a stricter requirement than those listed.

An authorised person who holds BCU Competition Coach Award may apply BCU standards for competition training and events provided he or she is present for the activities on water for which his or her qualifications are valid

Life jackets are to be worn in all boats when there is low visibility.

- **NOTE i** : A pulling boat (large) is over 4 metres in length.
- **NOTE ii** : In certain capsizing situations with a low boomed sailing dinghy, it is possible for the collar of a life jacket to cause the wearer to become trapped under the sail. All sail people should be aware of this problem and be ready to offer quick assistance in the event of such a problem.
- **NOTE iii** : When paddling or board sailing on B3 or A Class Tidal Waters, all Members of the Movement must wear an approved buoyancy aid with a life jacket of the type with no inherent buoyancy capable of inflation to 150 Newton or a life jacket with inherent buoyancy and capable of inflation to full 150 Newton buoyancy.

- **NOTE iv:** When white water rafting in rubber rafts on inland water specification B3 or A, a buoyancy aid should be worn for added protection in the event of being ejected into the moving water.
- **NOTE v:** The safety boat category refers to fast craft, typically rigid inflatable, inflatable or dory. This does not include open displacement boats used for general escort duty.  
When operating on B3 waters the crew of a fast safety boat may wear a buoyancy aid to CE 50 Newton if they are supported by another similar fast safety craft.
- **NOTE vi:** When actually racing under the auspices of the British Dragon Boat Racing Association the requirement to wear a buoyancy aid may be relaxed for the paddlers. The drummer and the steersman must wear a buoyancy aid at all times.

### Weights for Buoyancy Aid Testing – 50N Standard

	Minimum Buoyancy	Lead Weight	Iron or Steel weight	Cast Iron Weight
Weights can be manufactured locally using this chart	50N	5.5 kg	5.7 kg	5.8 kg
(If you wish to use other metal contact the County Water Adviser for Values)	45N	4.9 kg	5.2 kg	5.2 kg
	40N	4.4 kg	4.6 kg	4.6 kg
	35N	3.8 kg	4.0 kg	4.1 kg

### Publications Cross Reference

Current Editions of :

Policy Organisation and Rules of the Scout Association

Authorisation Scheme for Water Activities - FS120601

Water Activity Assessment and Advice - FS120602

<b>Scout Classification</b>	<b>C</b>	<b>B1</b>	<b>B2</b>	<b>B2 (Non-Tidal)</b>	<b>B3</b>	<b>A</b>
Pulling Boats (Small)	Buoyancy aid to be worn CE 50 Newton				Lifejackets to be worn CE 150 Newton	
Pulling Boats (large) Note i)	Not Mandatory	Buoyancy aids to be carried CE 50 Newton			Lifejackets to be carried CE 150 Newton	
Dinghy Sailing (Open Craft under 20') (Note ii)	Buoyancy aid to be worn CE 50 Newton				Lifejackets to be worn CE 150 Newton	
Sailing (Cruisers)	Lifejackets of 150 Newton to be carried and worn in bad visibility					
Paddling (Note iii)	Buoyancy aid to be worn CE 50 Newton					
Powerboat (Cruising)	Buoyancy aid to be carried CE 50 Newton				Lifejackets to be carried CE 150 Newton	
Powerboat (Open Planing)	Lifejackets to be worn CE 50 Newton				Lifejackets to be carried CE 150 Newton	
Powerboat (Open Displacement)	Not Mandatory	Buoyancy aid to be carried CE 50			Lifejackets to be carried 150 Newton	Lifejackets to be worn 150 Newton
Safety Boats (Note v)	Buoyancy aid to be worn CE 50 Newton				Lifejackets to be worn CE 150 Newton	
Rafting (Note iv)	Not Mandatory	Buoyancy aid to be worn CE 50 Newton			Lifejackets to be worn CE 150 Newton	
Tender to another vessel	Buoyancy aid to be worn CE 50 Newton				Lifejackets to be worn CE 150 Newton	
Windsurfing (Note iii)	Buoyancy aid to be worn CE 50 Newton				Lifejackets to be worn CE 150 Newton	
Personal Watercraft	Buoyancy aid to be worn CE 50 Newton				Lifejackets to be worn CE 150 Newton	
Dragon Boats (Note vi)	Buoyancy aid to be worn CE 50 Newton					
Open Craft over 20'	Buoyancy aid to be worn CE 50 Newton				Lifejackets to be worn CE 150 Newton	