

RNLI | Research Project

Float to Live trials 2022

Testing the ability to float in different water conditions

Department:	RNLI Insights, Technology and Strategy (Research Team)
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Summary

The University of Portsmouth conducted research on behalf of the RNLI to explore floating competency in different water conditions. Participants with varying levels of confidence in their ability to float took part in multiple float sessions in different open water scenarios. They received RNLI Float to Live messaging, as well as additional instruction, to test the effectiveness of current RNLI guidance.

A combination of instruction and practice improved participants' confidence and ability to float. This shows that the current Float to Live water safety advice is effective but could be improved by applying the following recommendations.

Recommendations for Float to Live advice:

- Change messaging from 'lie back' to 'put your head back so that your ears are submerged'.
- Emphasise 'relax'.
- Breathe normally if you can – do not try to hold your breath (unless there is wave splash).
- Move the emphasis away from floating horizontally – it's OK if your legs sink.
- Give an accurate description of sculling, such as 'move your hands in a sideways motion rather than up and down', to help people who need to do this to stay afloat.

- Spread your arms and legs to improve stability, particularly in choppy conditions.
- Encourage people to practise floating.

And in moving water with wave splash or obstacles:

- Turning your back to waves may help.
- In flowing water with obstacles, people may need to adopt a defensive floating position to avoid collisions.



Photo: RNLI

Background and context

Every year, the RNLI and other partners help thousands of people who end up getting into difficulty in, on or close to the water. But around 140 people¹ die by accident in UK and Irish coastal waters each year. Half of these people never intended to enter the water.

One water safety message we prioritise is to float if you get into trouble in the water, whether at the coast or inland. Floating combats the impact of cold water shock, which makes you gasp uncontrollably, reduces your ability to swim, and increases the risk of drowning in the first 90 seconds of being in cold, open water.

As a result of sharing this message with our partners, around two thirds of the UK and Irish public know they should try to float if they fall into open water². And people have contacted the RNLI to confirm that floating helped save their life.

To continue to develop our Float to Live messaging and targeting, we commissioned research with the Extreme Environments Laboratory at the University of Portsmouth. The aim of the research was to investigate what instructions are most effective in helping people to float, including less confident water users, and whether this changes in different water conditions such as fresh and sea water, and calm and moving water.

Research aims and objectives

1. Does the current Float to Live advice work for all people, including less confident water users?
2. How can we increase someone's understanding of how to float, and their confidence and ability to do so, if they are less confident in the water?
3. Does the current Float to Live advice work for people in a variety of realistic open water settings such as salt water and freshwater, and still and moving water?
4. Is the current Float to Live advice effective for people who intentionally enter the water as well as those who enter the water unexpectedly?



Cold water shock makes you gasp uncontrollably

¹ UK average (116 people) from the Water Incident Database (WAID) 2019–21. Republic of Ireland average (23 people) from Water Safety Ireland (WSI) 2011–15.

² Basis research, RNLI Water Safety Survey, September 2022

Method and approach

Participants

A total of 25 participants were recruited, men and women, encompassing a range of body shapes, and aged between 20 and 60. None were competitive swimmers or swam regularly in open water. The number and type of float sessions varied for each participant.

Float sessions

During the summer of 2022, four different float sessions were held in outdoor locations in both still and moving water with water temperatures averaging 23°C.

A. Still water float sessions consisted of the following in this order:

1. Floating with no instruction.
2. Floating after seeing an RNLI Float to Live video and poster.
3. Floating after receiving float training with a swim instructor, which was tailored for each participant.
4. Floating after a simulated fall wearing clothes.

B. For safety reasons, the moving water float sessions took place after the still water float sessions. They consisted of:

1. Floating with no additional instruction.
2. (Fresh water only) Floating after receiving float training with Surf Life Saving GB. This training included the following instruction – feet downstream; chin on chest; look where you’re going; legs together with knees bent and heels lower; arms out to the side for stability; switch to the still water floating technique as soon as possible once in calm water, as described in point A.
3. Floating after a simulated fall wearing clothes.

Measurements

Participants’ ability to float during these sessions was measured using a combination of questionnaires, expert observations and video analysis. This included measuring:

- their perceived floating difficulty, before and after
- their floating technique
- the effort required to float
- and interference caused by cold water shock or shivering.

Ultimately, measurements were designed to understand the information, instruction and practice that helped the participants to float.



Key findings

Despite water temperatures averaging 23°C, over two thirds (68%) of participants found that cold water shock or shivering affected their breathing, showing the relevance of the Float to Live message across the seasons.

Impact of floating instruction and practice

A combination of instruction and practice resulted in the following as participants progressed through the different float sessions:



An increase in floating competence and confidence



A decrease in perceived difficulty of floating and the effort required to float

Active and passive floaters

Research demonstrated that floaters fall into two groups: active and passive. Active floaters need to scull to stay afloat, whereas passive floaters are more naturally buoyant. This relates to body fat, with men more likely to be active floaters than women.

Effective instructions

The most effective instructions given to participants were:

- Put your head back so that your ears are underwater
- Relax
- Breathe normally if you can
- It's OK if your legs sink
- Spread your arms and legs.

And for active floaters:

- An accurate description of sculling, such as 'move your hands in a sideways motion rather than up and down'.

Additional instructions for moving water

To float in moving water, additional instructions may be required to avoid obstacles, depending on the speed of the water flow and environment.

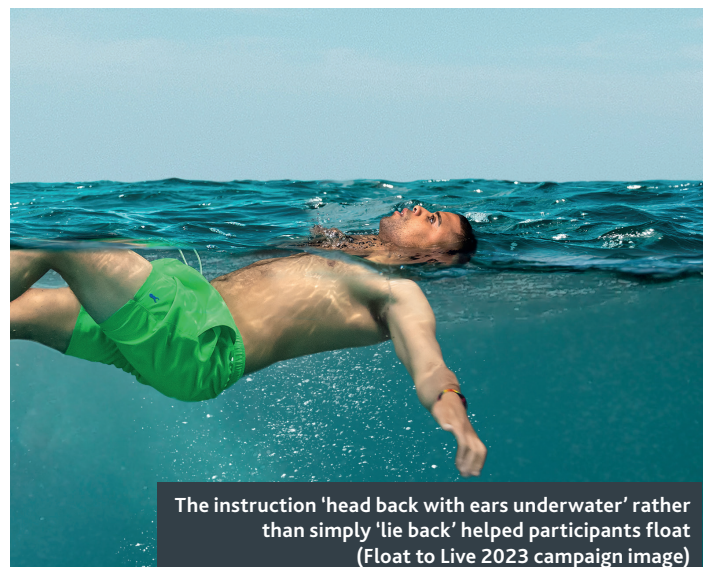
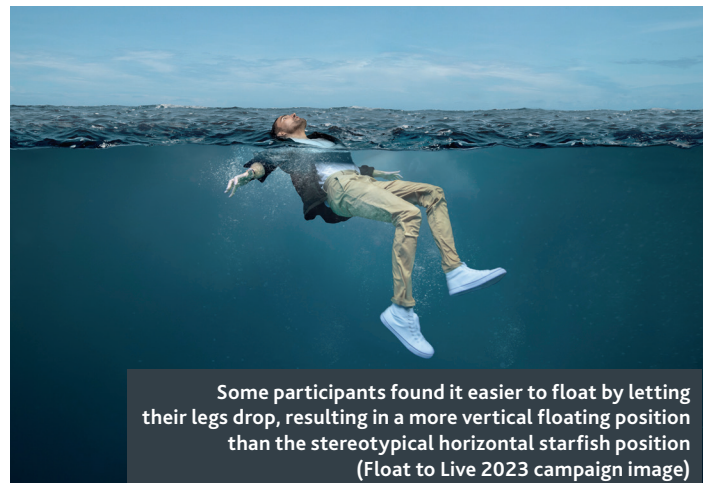
These instructions are:

- feet downstream
- chin on chest to look out for obstacles
- arms out to stabilise / scull
- legs together
- knees bent
- turn your back to waves if necessary.

Instructions once cold water shock has passed

The actions that should be taken after about 90 seconds once cold water shock has subsided are very situation-specific. However the University of Portsmouth give the following general advice based on previous research and experience:

- Assess the situation and signal or call for help. Note that your legs may need to work harder to keep your airway clear from water if raising your arms to attract attention.
- Make a plan to get to safety and signal or call for help as soon as possible because your decision-making and physical capacity will soon deteriorate due to the cold.
- If you have fallen off a watercraft which is still floating, hold on to it and, if possible, get out of the water.
- If necessary, and if you are confident and competent enough to do so, swim to get to a better situation. Note swimming ability is greatly reduced in cold water, so moving your legs while on your back may be an alternative as it helps to protect your airway and reduces your cooling rate.



How the RNLI is using this evidence

We are applying these insights to improve the way we, and our partners, communicate Float to Live – one of our priority water safety messages – to the public, especially those most at risk. For example, by communicating clearly that putting your head back so that your ears are underwater will help you float.

The aim is to ensure that the Float to Live message is as clear and as well understood as possible so that it works for less-confident water users or floaters, and in a wide range of inland and coastal waters.

The ultimate ambition is that more people can put this lifesaving advice into practice, should they get into trouble in the water.



Further reading

RNLI Float to Live safety advice: [RNLI.org/floating](https://www.rnli.org/floating).

Acknowledgement and thanks

- Extreme Environments Laboratory, University of Portsmouth, who conducted the research on behalf of the RNLI.
- Research participants, especially those who went considerably outside of their comfort zone.
- Swim instructors and Surf Life Saving GB.
- Locations and support provided at reduced rates by Andark Lake, Andrew Simpson Centre and Cardiff International White Water.



**If you're struggling
in the water ...**

**Tilt your head
back with ears
submerged**

**Relax and move
your hands to help
you stay afloat**

FLOAT TO LIVE

 **#RESPECTTHEWATER**

Example of RNLI Float to Live campaign material for 2023,
which includes updated messaging based on this research