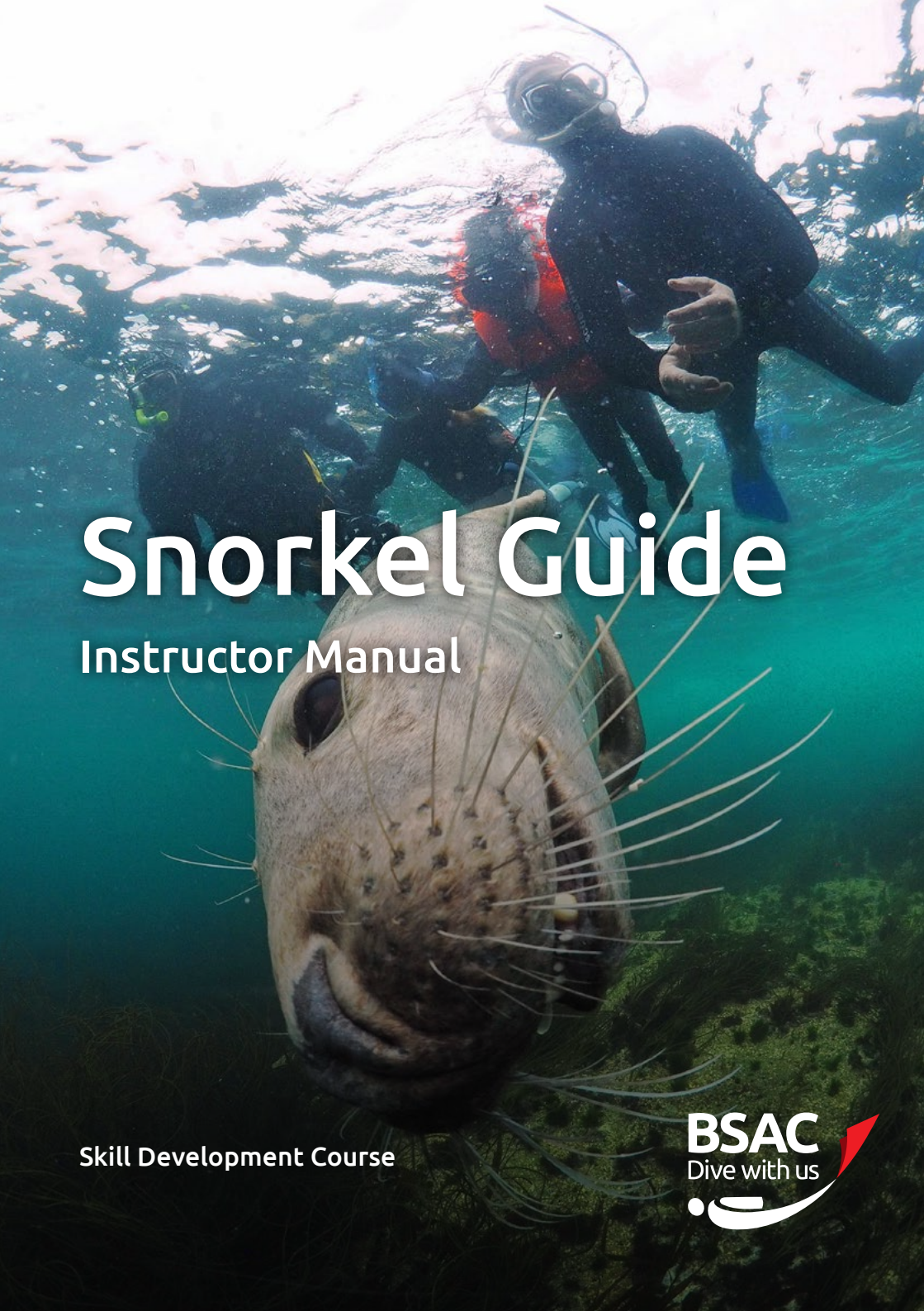

Snorkel Guide

Instructor Manual

Skill Development Course

BSAC
Dive with us

Acknowledgements

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Contents

Go back

Go back

Go back

Go back

Document change record

Date published	Document Version Number	Page(s) affected	Description of changes	Author
01/07/2024	v1.0	All	New course	Sophie Rennie

Course details

Course details

Definition

A BSAC Snorkel Guide is qualified to lead snorkelling excursions in line with ISO 13289. They are competent to:

- **Lead snorkellers of all abilities from beginner to expert.**
- **Plan and manage snorkelling excursions in tidal and non-tidal conditions.**
- **Manage groups from boats, on the shore or in water.**
- **Conduct snorkelling excursions within BSAC guidelines.**
- **Rescue snorkellers and administer appropriate first aid.**

Course outline

The BSAC Snorkel Guide course consists of:

- **Eight theory lessons.**
- **Ten Practical sessions, including an assessment.**

If all students have relevant previous qualifications in subjects such as AED, snorkel rescue and planning, then some of these may be removed or delivered as refresher lessons.

Student entry requirements

In order to attend this course students must be:

- **At least 18 years old.**

Instructor requirements

Snorkel Guide training is to be carried out by a BSAC Advanced Snorkel Instructor or BSAC Open Water Instructor.

Course materials

All students are to have an individual copy of the Snorkel Guide Student Guide.

Snorkelling equipment

Equipment consisting of fins, a mask, a snorkel, a personal flotation device (if appropriate), a quick release weight system (if appropriate) and an exposure suit (if appropriate). In open water environments or where there is a risk of surface traffic or other surface water users, a Surface Marker Buoy (SMB) is also considered appropriate.

Note: An example of a personal flotation device is a snorkelling vest.

Facilities

The following facilities are required:

- **Classroom or area to conduct a theory workshop.**
- **Sheltered water area to conduct the practical workshop.**

Go back

- **Snorkel equipment including SMB/reel.**
- **Snorkel vests.**
- **Emergency first aid pack in waterproof bag.**
- **VHF radio or other means of communication in waterproof bag.**
- **Automated External Defibrillator (AED).**
- **O_2 equipment.**
- **Use of a boat with qualified coxswain (when a boat is the only means of accessing the snorkel site).**

Sheltered water

This is a well-maintained swimming pool or sheltered open water which provides similar conditions, being generally less than 4m deep, with a stepped or gently shelving open bottom of firm composition, adequate visibility (minimum 5m), and free from significant water movement from either waves or currents.

Within sheltered waters, there will need to be:

- **Standing-depth water in between waist and chest deep.**
- **Deeper water of approximately 2-5m deep.**

Open water

This covers large bodies of water such as lakes, flooded quarries, rivers and the sea to a maximum of 20m deep, encompassing a variety of topography and underwater life, and which may have some water movement due to waves or current (maximum 0.5 knot). Visibility should generally be in excess of 4m but may, on appropriate occasions, be less.

Excursion management

Actions and measures necessary to ensure safe conduct of recreational snorkelling activities, including planning, briefing, conduct and control, emergency procedures and de-briefing.

Competencies of a snorkelling guide

Snorkelling guides shall be trained such that, when assessed, they are deemed to have sufficient knowledge, skill and experience to plan, organise and conduct snorkelling excursions and lead recreational snorkellers in open water.

Snorkelling guides are qualified to do the following:

- **Provide all elements of snorkelling excursion management.**
- **Oversee groups of snorkellers from the shore, a boat, or other platform.**
- **Lead groups of snorkellers in confined water and/or open water.**
- **Provide advice and guidance to participants of snorkelling excursions, including issues regarding participants' safety and techniques to minimise impact on the environment.**
- **Conduct any specialised recreational snorkelling activities for which they have received appropriate training.**
- **Plan and execute appropriate emergency procedures.**
- **If snorkelling and environmental conditions are significantly different from those previously**

Go back

experienced, a snorkelling guide requires an appropriate orientation with regard to local environmental conditions.

Snorkel Guides may need additional training to lead excursions in more demanding conditions. These include:

- **Night snorkelling excursions.**
- **Snorkelling excursions in currents.**
- **Snorkelling excursions on wreck sites.**
- **Snorkelling from boats.**

Extending experience should be done by a more experienced snorkeller who has a greater level of theory and practical knowledge.

Required theoretical knowledge

During the Snorkel Guide course, students will gain sufficient understanding and knowledge of the following topics in order to plan and execute snorkelling excursions in accordance with ISO 13289, in typical conditions encountered in the local environment and to plan for and respond to possible emergencies during such excursions:

- **Equipment including specialist equipment (O_2 and AED).**
- **Physiology of snorkelling.**
- **Medical issues related to snorkelling.**
- **Environmental considerations and responsible practices.**
- **Excursion planning and management.**
- **Communications – standard and emergency.**

- **Recommended safe snorkelling practices.**
- **Snorkelling techniques**
- **Accident management.**
- **Awareness and understanding of local snorkelling related legislation and legal requirements.**
- **Chartwork and position fixing.**

Personal snorkelling skills

The competence of students in all snorkelling skills must be suitable to cope with the most demanding operational factors of their region. Influencing factors may include the following:

- **Size and experience of the group.**
- **Underwater visibility.**
- **Current and tides.**
- **Surface conditions.**
- **Water temperature.**
- **Surface traffic.**
- **Equipment in use.**
- **Flora and fauna.**

Students shall be able to perform the following skills in a manner showing highest level mastery and competence:

- **Use of mask, fins and snorkel.**
- **Snorkelling equipment preparation.**
- **Pre-dive inspection of snorkelling equipment.**
- **Safe entries and exits.**

Go back

- **Proper weighting (if appropriate).**
- **Snorkel clearing.**
- **Proper descent and ascent procedures (e.g. equalising pressure in ears and mask).**
- **Swim on the surface and under water efficiently with snorkelling equipment using different finning techniques (e.g. flutter kick, dolphin kick).**
- **Equipment care and maintenance.**
- **Snorkeller assistance techniques (self and others) (i.e. to assist another person and provide support on the surface).**

Snorkelling related skills

Snorkelling related skills shall include the following:

- **Excursion planning and preparation**
  - » **Site selection taking into account participant capabilities and environmental factors.**
  - » **Emergency plan and emergency equipment (first aid equipment, communication devices etc.).**
  - » **Equipment preparation.**
  - » **Limiting parameters for participants in the excursion (e.g. area boundaries, time limits, danger zones, depth limits).**
  - » **Use of ancillary support equipment (e.g. floats, boundary markers).**
- **Snorkel excursion brief**
  - » **Safety – buddy pairs, everyone fit for the task, dynamic risk assessment completed.**
  - » **Exercise – the plan, timings and return.**

Go back

- **Equipment – snorkel equipment, ancillary equipment, safety equipment.**
- **Discipline – what you can and cannot do.**
- **Signals – the way to communicate, buddy to buddy, guide to group, guide to surface cover and emergency signals.**

- **Snorkelling excursion**
  - **Selection of equipment.**
  - **Kitting up.**
  - **Equipment fit and function check.**
  - **Participant accounting procedures (e.g. roll-call of participants entering and exiting the water).**
  - **Group control techniques.**
  - **Continued monitoring of environmental conditions – wind – tide – weather.**
  - **Awareness of snorkellers' stress levels.**
  - **Ensuring environment is respected (e.g. avoiding contact with delicate marine organisms).**
  - **Identification of in water hazards.**
  - **Appropriate reaction to problems and emergencies.**
- **Post snorkel excursion**
  - **Group debrief.**
  - **Check all ok.**
  - **Record the occasion.**
  - **Equipment care.**

Snorkeller rescue

Students shall demonstrate rescue skills by completing at least one open water rescue.

Go back

Rescue skills shall include the following:

- **Dealing with cramp.**
- **Recognition and management of emergency situations (e.g. tired, panicked, or unresponsive snorkeller).**
- **Effective emergency surface actions.**
- **Casualty recovery to the surface from a depth of at least 5m.**
- **Transportation techniques on the surface.**
- **Conscious and unconscious casualty recovery from the water.**

First aid

Students shall complete or will prove that they have completed a course/courses in first aid and cardiopulmonary resuscitation (CPR) approved by the training organisation and shall have a valid qualification. The course will include administration of oxygen to a casualty and the use of an Automated Defibrillator.

Evaluation

Watermanship and snorkel skills

Students shall be able to demonstrate the following skills using snorkelling equipment: (ISO requirement 13970 – 'Snorkelling Guide' *)

- ***Dive vertically headfirst from the surface in water too deep to stand.**
- ***Swim at least 25m under water on a single breath of air.**

- ***Ascend safely by looking up and around while swimming, and by holding one hand over the head.**
- ***Clear a snorkel of water and resume breathing through the snorkel without lifting the face from the water.**
- ***Make a face down, surface 800m snorkel swim in 15 min or less.**

Excursion management skills

Students shall demonstrate to a snorkelling guide instructor mastery of the planning and conduct of a snorkel excursion in accordance with ISO 13289. Such demonstrations may take the form of simulated or actual snorkel excursions, but in either case, shall be supervised by a snorkelling guide trainer.

The assessment criteria are stipulated in the Snorkel Excursion Management Assessment.

Award of qualification

Instructors are to follow the Qualification Card process on the BSAC website.

Course timeline

The entry standard for students will drive the duration of the course but 5 days should be the maximum.

For those with considerable experience and/or relevant previous training such as AED and Oxygen Admin, then it may not be necessary to teach every element and an informal assessment may suffice. In these circumstances, it may be possible to shorten the course significantly.

Time and tide constraints may make assessing larger groups more

Go back

challenging. If the instructor has witnessed satisfactory levels of competence during the training then they may choose to only assess selected elements.

Example course timeline

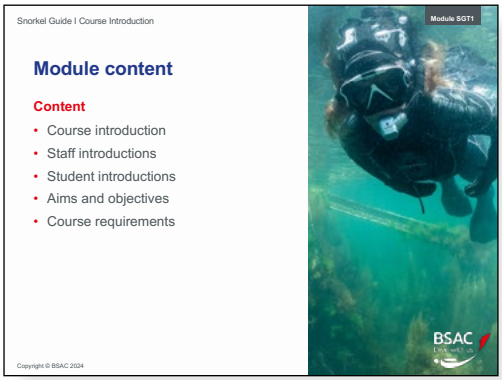
Day	Code	Type	Title	Duration	Time
1	**SGT01**	Theory	Introduction	30 mins	0900 - 0930
	SGT02	Theory	Snorkel guiding	45 mins	0945 - 1030
	SGT03	Theory	Chartwork	90 mins	1045 - 1215
	SGT04	Theory	Snorkel excursion sites	60 mins	1315 - 1415
	SGT05	Theory	Equipment for snorkel guides	30 mins	1430 - 1500
	SGT06	Theory	Snorkel rescue	45 mins	1515 - 1600
2	**SGP01**	Practical	Risk assessment	90 mins	0900 - 1030
	SGP02	Practical	Snorkelling skills	150 mins	1100 - 1330
	SGT07	Theory	First aid for snorkellers	120 mins	1430 - 1530
3	**SGP03**	Practical	Chartwork knowledge and passage planning	60 mins	0900 - 1000
	SGP04	Practical	Planning to go snorkelling	90 mins	1015 - 1145
	SGP05	Practical	Student planning	90 mins	1145 - 1315
	SGP06	Practical	Oxygen administration and use of AED	60 mins	1345 - 1445
	SGP07	Practical	Snorkel guiding in practice	120 mins	1500 - 1700
4	**SGP08**	Practical	Practical Rescue Management	240 mins	0900 - 1300
	SGP09	Practical	Remedial training/ assessments	As requested	1400 - Finish
5	**SGP10**	Practical	Assessments	All day	0900 - Finish

Course Introduction

Course introduction

This lesson sets the scene for the course overall. It briefly outlines the course content, domestic/logistics and timetable.

Module content



The course introduction is an important aspect of the course as it will give you a good indication as to the experience levels you are dealing with. The course can then be tailored to the group wherever possible.

A BSAC Snorkel Guide (SG) is someone who can safely guide groups of snorkellers in all types of environment, from sheltered water to open tidal water. As such they will require a good level of snorkel dive management knowledge as well as some advanced snorkel skills and the ability to react to any emergency which could arise.

The snorkel guide ISO 13970 – ‘Snorkelling Guide’ qualification meets the minimum requirements of the international standard (ISO 13289:2011) for supervising recreational snorkelling excursions.

Introduce yourself and any team you have with you. Get the students to give you their snorkel experience in a brief minute.

Go back

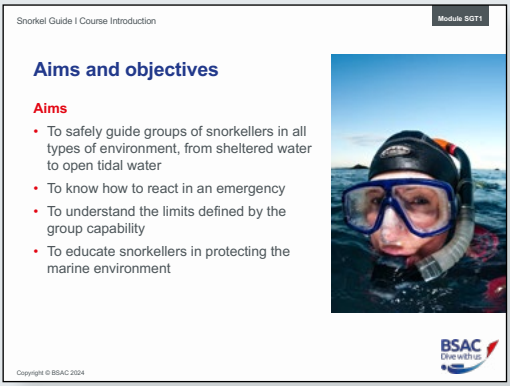
Local information should include fire alarm signal and what to do, toilet location and anything else of relevance. Emergency Action Plan (EAP).

Content

- **Course introduction**
- **Staff introductions**
- **Student introductions**
- **Aims and objectives**
- **Course requirements**

Aims and objectives

The course aims will stipulate the boundaries where snorkel guiding can take place. There will be an element of understanding and practical sessions looking at emergencies and what to do.



Having found out the level of experience of the student group you will be able to define the limits of operation. For example – if there are no qualified boat drivers then any snorkel guiding will need to start and finish on the shore until someone is qualified. In the event that there is no requirement to run snorkel activities from a boat then this is also acceptable.

Aims

- **To safely guide groups of snorkellers in all types of environment, from sheltered water to open tidal water**
- **To know how to react in an emergency**
- **To understand the limits defined by the group capability**

Go back

- To educate snorkellers in protecting the marine environment

Course requirements

Students are likely to be:

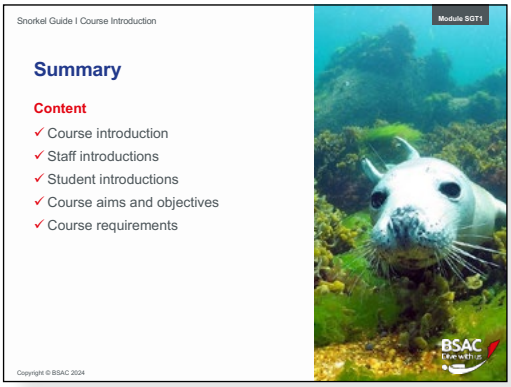
- Entry level scuba divers or BSAC snorkel divers
- Familiar with the conditions
- Guiding in their local environment
- BSAC members

Summary

Quick run through of the intro slide and invite any questions from the students.

Content

- ✓ Course introduction
- ✓ Staff introductions
- ✓ Student introductions
- ✓ Course aims and objectives
- ✓ Course requirements



Snorkel Guiding

Snorkel guiding

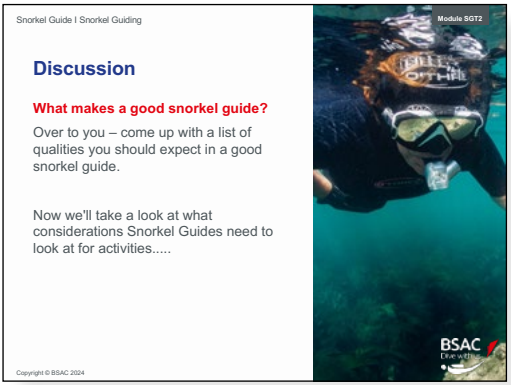
Module content

Use this session to get the students to come up with all the things a good Snorkel Guide should be thinking about and researching prior to the session. This forms the basis of the course and acts as an early ice breaker if the students don't normally work together. Give them a few minutes to compile a list then write them up on a white board or flip chart.

Discussion

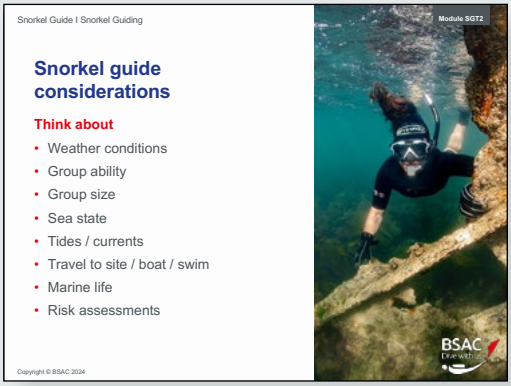
What makes a good Snorkel Guide?

Over to you – the students to come up with a list of qualities you should expect in a good Snorkel Guide. E.g. Role model, safe, competent etc.



Snorkel Guide Considerations

Think About

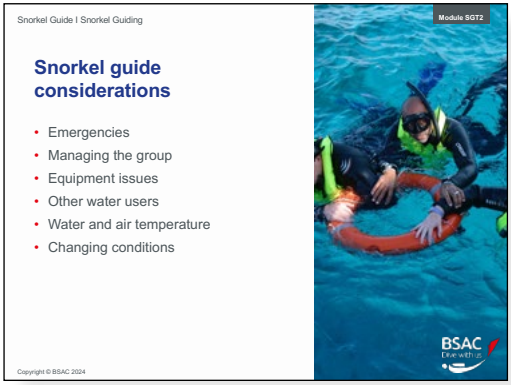


- **Weather conditions**
  Weather conditions will dictate ease of entry and exit.
- **Group ability**
  The group may all be complete beginners or a range of abilities and so maybe the group will have to be split into two groups and some skill teaching to take place.
- **Group size**
  In accordance with your dynamic risk assessment, a ratio of 1:6 or 2:12 as a maximum in UK waters. Keeping them all together will become harder if the group is too big.
- **Tides / currents**
  Tides and currents should be understood so that you will know whether you can safely get the group back to where they started if you don't have a means of picking them up down tide or down stream.
- **Travel to site / boat / swim**
  How do you get to the site? If going by boat, is there a qualified boat handler who will be monitoring the group whilst they are in the water. If it is a long swim to the site, could you take them by boat instead to reduce fatigue?
- **Marine life hazards**
  Then there are marine life hazards. We don't want to touch anything and we should be suitably covered so that we don't get stung by anything.

Go back

- **Risk assessments (RA)**
  We should have a suitable risk assessment in place and all guides should be aware of this. It is a 'live' document that should be regularly updated to ensure it is fit for purpose. There are example risk assessments on the BSAC website. A RA development lesson comes later in the course.

- **Emergencies**
  Emergencies – whilst thankfully rare – do happen, and it is important to know what to do in the event of an emergency. There will be on site first aid and recovery through to organising emergency care and then there is the post follow up incident reporting that will ensure we learn from these occurrences.



- **Managing the group**
  Managing the group is all about how long the session is, counting them in, site supervision and activity, counting them out and making it enjoyable.

- **Equipment issues**
  Whether people bring their own equipment or use that provided by the Snorkel Guide, it is important that it is fit for purpose and suited to each individual in terms of fit.

- **Other water users**
  There are areas where the water is shared by other water users and this needs to be managed so that the snorkel group is safe and not in any danger of being hit by jet skis, other boats or large volumes of people in the water. The group needs to be highly visible at all times.

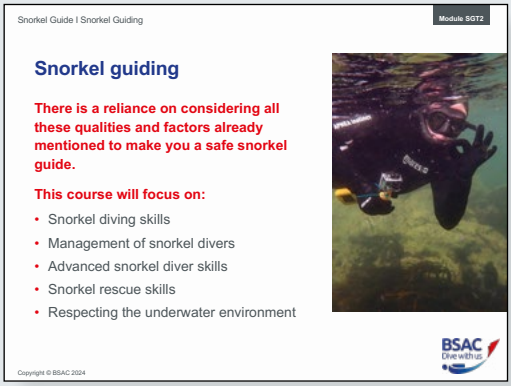
- **Water and air temperature**
  Water and air temperature are really important. In cold climates the group MUST be suitably kitted out with a thick but pliable suit for ease of movement and have head and hands covered as these are areas where most heat is lost. Remember that we lose body heat 25 times faster in water compared to on land and sea temperatures in our region of the world range between 5 degrees and 18 degrees – well below the body core of 37 degrees we are trying to maintain.
- **Changing conditions**
  Finally, we need to be constantly aware of the changing conditions. In some parts of the world, the weather changes very quickly and we don't want to be caught out. Tidal changes can very quickly move us a lot more quickly than we thought would happen. They can also lead to wind-versus-tide events, which kick up the water surface, making it more difficult to see everyone.

Once the student list is compiled it is then worth pointing out why each of the above (and any others added) are so important when preparing to go snorkelling.

Snorkel guiding

This course will concentrate on what makes a good guide and will be using materials from other stand alone courses.

There is a fair amount of theory overlap which will not be covered each time.



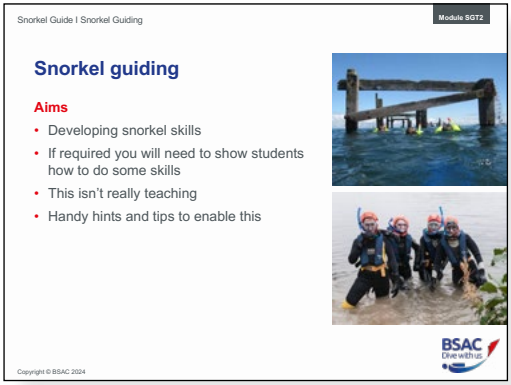
Go back

There is a reliance on considering all these qualities and factors already mentioned to make you a safe snorkel guide.

This course will focus on:

- **Snorkel diving skills**
- **Management of snorkel divers**
- **Advanced snorkel diver skills**
- **Snorkel rescue skills**
- **Respecting the underwater environment**

Aims

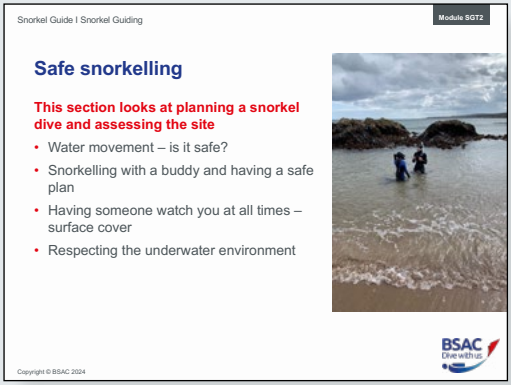


Invariably there will be beginners to snorkelling and you will need to be able to show them how to do skills such as fitting equipment correctly, how to clear water from the snorkel, good finning techniques and surface diving if that's required. Then you will need to teach them signals so that they can communicate with each other and the guide in the water. We are going to use demonstration – mimic in order to be effective and easy for the students to pick up whilst on the snorkel excursion.

- **Developing snorkel skills**
- **If required, you will need to show students how to do some skills**
- **This isn't really teaching**
- **Handy hints and tips to enable this**

Safe snorkelling

First and foremost we must be safe at all times when guiding the group. This section will go into greater detail and cover most of the elements listed above.



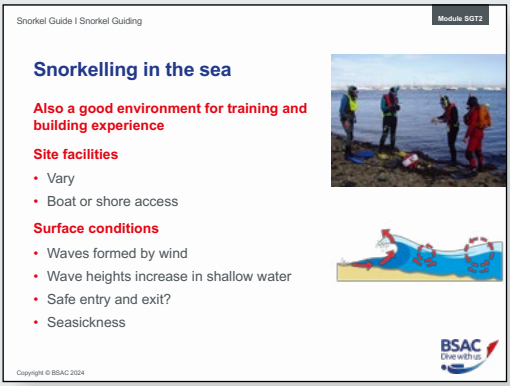
This section looks at planning a snorkel dive and assessing the site

- **Water movement – is it safe?**
- **Snorkelling with a buddy and having a safe plan**
- **Having someone watch you at all times – surface cover**
- **Respecting the underwater environment**

Snorkelling in the sea

Also a good environment for training and building experience

Snorkelling in the sea or a sea loch is a completely different experience to a swimming pool.



Go back

Site facilities

- **Vary**
  For a start the conditions are never the same on any two days.
- **Boat or shore access**
  Site facilities will vary and this includes toilets, changing areas, access to the water and the available access for an emergency evacuation.

Surface conditions

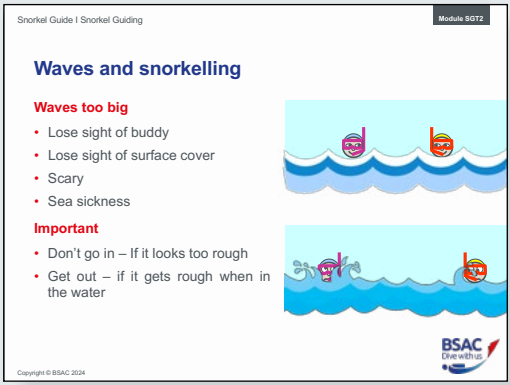
- **Waves formed by wind**
  Surface conditions will vary depending on the wind strength and direction.
- **Wave heights increase in shallow water**
  It may be blowing a gale coming from the north but you are on the south coast and therefore in the lee of the wind – as long as you don't go too far out.
- **Safe entry and exit?**
  The tide will alter the depth of the water for entry and exit. Is it still safe?
- **Seasickness**
  Some may be prone to seasickness, either from the movement of the water if there is any swell moving the marine life around on the seabed below or from being in a boat.

Waves and snorkelling

We touched on this earlier. Waves mean all sorts of problems for you as the snorkel guide, your group and the surface cover trying to keep an eye on you. BSAC has a policy of not going in the water if the wind strength is anything equal to or over a Force 4 on the Beaufort Wind Scale.

Waves too big

- Lose sight of buddy
- Lose sight of surface cover
- Scary
- Seasickness



Important

- Don't go in – if it looks too rough
- Get out – if it gets rough when in the water

Tides

Tides are very important when planning to go into the water. The moon and sun will create a gravitational pull from the water surrounding the earth. When the moon and sun are in a line then the pull is greater than if they are at right angles to each other.

The course instructor should create a model and build it up to show the way the moon moves round and moves the bulge as it goes.

Big tides are where the moon and sun are lined up with the earth and these are spring tides. When they are at right angles the influence is less and these are neap tides. Clearly neap tides are better for snorkelling as the group won't be affected as much by the tide.

Moon's gravity pulls ocean towards it

- Bulge of high water
- Bulge on opposite side of earth

Go back

Sun's gravity also has an effect

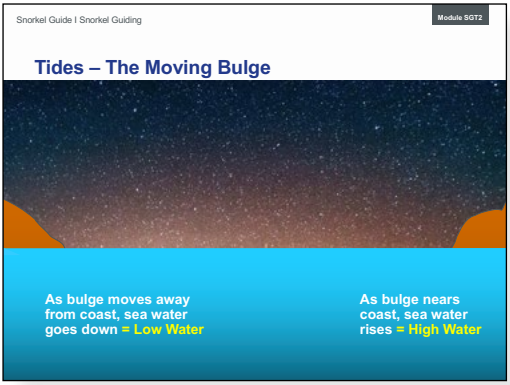
- 'Neap' (small) tides
- 'Spring' (large) tides

Tide cycle approx.. 12 hours

Moon (Lunar) month = 28 days

Tides – The moving bulge

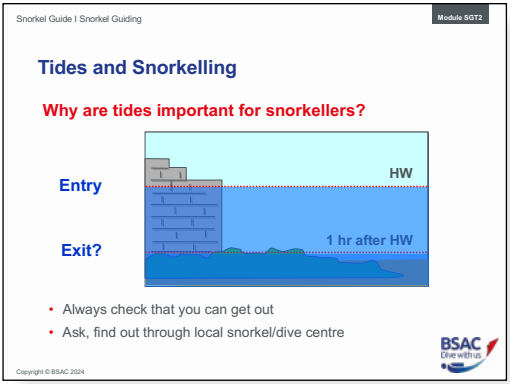
This happens every day – twice a day and the tide is approximately 6 hours from high water to low water. Tides in your area of operation can be checked for free on the internet for up to 7 days ahead of your session. You can, however, predict the tides for many years to come.



Tides and snorkelling

Why are tides important for snorkellers?

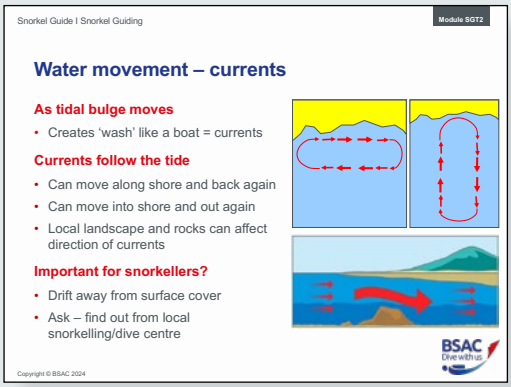
If you are working in an area with little tide then this is not an issue. Some tides have several metres between low water and high water and this WILL make a difference. A ladder against a



harbour wall may not reach if you come back at low water and even worse, there may be no water against the harbour wall!

Water movement – currents

Not only can the tide make the water move, but currents will generally be present – especially if there are rocks under the water or an undulating seabed. If you are near a narrow estuary entrance then the water can be funnelled up through this area creating very fast currents.



It is important that you know your local area and can work out when it is best to go out.

Close to the shore you can work out water movement using the Rule of Twelfths and further away using the tidal diamonds on the chart.

Instructor to use a local chart to explain both these processes.

As tidal bulge moves

- **Creates 'wash' like a boat = currents**

Currents follow the tide

- **Can move along shore and back again**
- **Can move into shore and out again**
- **Local landscape and rocks can affect direction of currents**

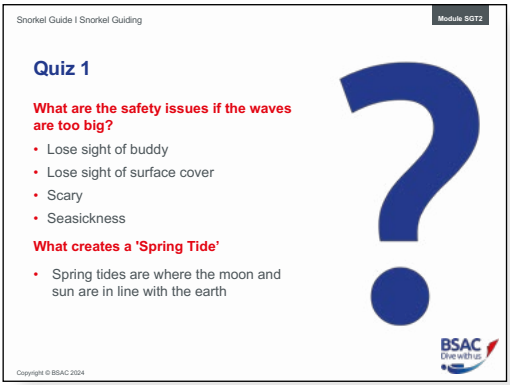
Go back

Important for snorkellers?

- Drift away from surface cover
- Ask – find out from local snorkelling/dive centre

Quiz 1

Instructors should routinely check for transfer of knowledge to the students. This can be done by asking an open question such as:



What are the safety issues if the waves are too big?

- Lose sight of buddy
- Lose sight of surface cover
- Scary
- Seasickness

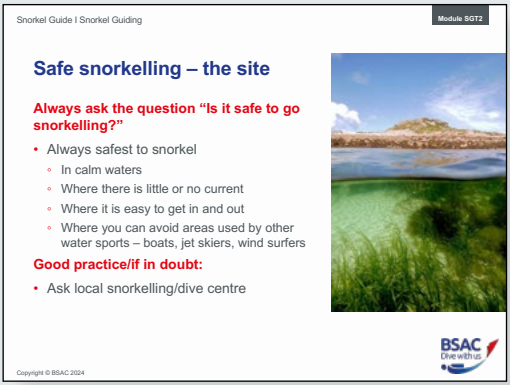
What creates a 'Spring tide'?

- Spring tides are where the moon and sun are in line with the earth

Correct any incorrect answers and reteach the relevant areas if necessary.

Safe snorkelling – the site

Mostly you will find that if you have done your research and are observant to the current weather conditions you will know whether it is safe to go into the water. Try to pick the safest areas with little or no tide, in the lee of any wind and where there are no other water users.



Always ask the question "Is it safe to go snorkelling?"

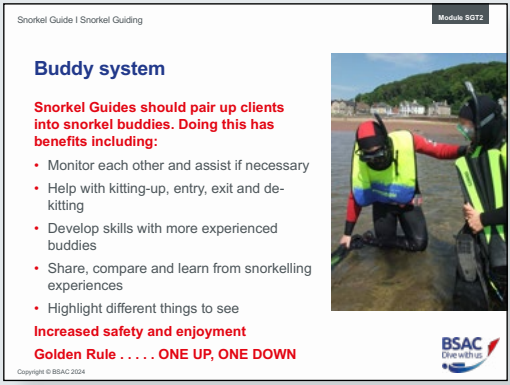
- Always safest to snorkel
  - » In calm waters
  - » Where there is little or no current
  - » Where it is easy to get in and out
  - » Where you can avoid areas used by other water sports – boats, jet skiers, wind surfers

Good practice/if in doubt:

- Ask local snorkelling/dive centre

Buddy system

Snorkel Guides should pair up clients into snorkel buddies. The benefits:



Go back

- **Monitor each other and assist if necessary**
  As the Snorkel Guide you must buddy up the group in accordance with ISO 13970.
- **Help with kitting-up, entry, exit and de-kitting**
  It is much better to be able to step in and tweak a loose fitting mask or fin if required, but to help every member of the group kit up can be very time consuming.
- **Share, compare and learn from snorkelling experiences**
- **Highlight different points of interest to each other**

Increased safety and enjoyment

It is important to not go into the water alone. There is no one to help in the event of an emergency and no one to share your experience with.

Golden Rule . . . . . ONE UP, ONE DOWN

If you surface dive under the water for any reason, one of you should stay on the surface and watch and wait for the other to come back up safely.

Buddy briefing - SEEDS

These should be tailored to the snorkel session you are offering.

Your students may not have heard of SEEDS if they have come from another agency so it is important to go through this in detail:

The SEEDS brief is your mini dynamic risk assessment to get into the water and back out safely. It outlines briefly who, what, why, where and when. Everyone should be in no doubt as to the plan and then everyone needs to stick to that plan.

Safety

- Operation as buddy pairs
- Site considerations and hazards
- Fitness to snorkel dive
- Surface cover

Exercise

- Time
- What we will see
- Entry/exit & snorkelling area

Equipment

- What is needed

Discipline

- One up, one down
- Stay together

Signals

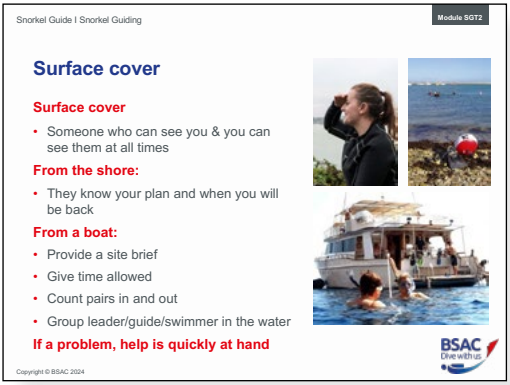
- Highlight any special signals

PLAN THE SNORKEL DIVE, SNORKEL DIVE THE PLAN

Go back

Surface cover

We briefly touched on this earlier. No one wants to be left behind. Some excursions by boat will have a tagging out and back in system which means the boat doesn't move away until all tags are back on the hooks. This is a great system as long as it is adhered to.



Surface cover

- **Someone who can see you and you can see them at all times**

From the shore:

- **They know your plan and when you will be back**

From a boat:

- **Provide a site brief**
- **Give time allowed**
- **Count pairs in and out**
- **Group leader/guide/swimmer in the water**

If a problem, help is quickly at hand

The environment underwater

Although we are only snorkelling, if we look down through the water column, the plant and marine life closest to the surface will appear bright and keep its colours. The deeper we go the less light penetration there is and therefore the bright colours disappear. So there is little point taking snorkellers into really deep water because they won't be able to see anything! It will also be colder!

Light

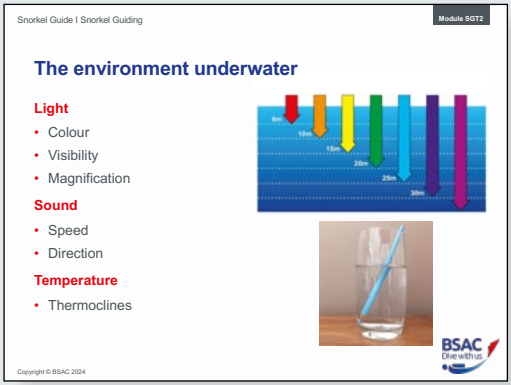
- Colour
- Visibility
- Magnification

Sound

- Speed
- Direction

Temperature

- Thermoclines



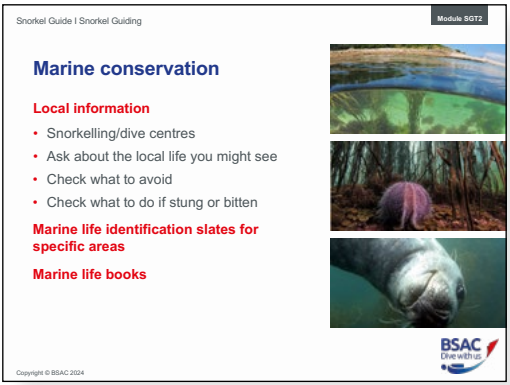
Marine conservation

You need to research the area you intend taking your group to. There may be a specific marine plant or animal you are likely to see and there will be information you can collate to help you with this. BSAC is very hot on conservation so we ask that you do your research.

Go back

Local information

- Snorkelling/dive centres
- Ask about the local life you might see
- Check what to avoid
- Check what to do if stung or bitten



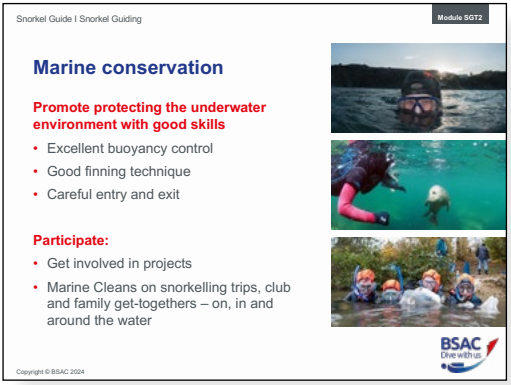
Marine life identification slates for specific areas

Marine life books

As the Snorkel Guide it is important to brief your group with explicit instructions on what they can and can't do. In some countries certain behaviours are illegal and you can be fined so make sure everyone understands the local bylaws.

Promote protecting the underwater environment with good skills

- Excellent buoyancy control
- Good finning technique
- Careful Entry and Exit
- Be mindful when getting in and out of the habitats and wildlife.



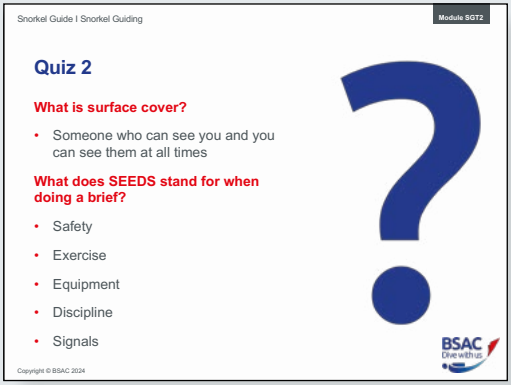
Participate:

- Get involved in projects

Go back

- **Marine Cleans on snorkelling trips, club and family get-togethers – on, in and around the water**

Quiz 2



What is surface cover?

- **Someone who can see you and you can see them at all times**

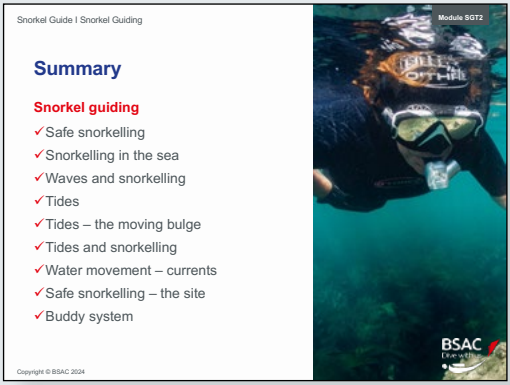
What does SEEDS stand for when doing a brief?

- **Safety**
- **Exercise**
- **Equipment**
- **Discipline**
- **Signals**

Correct any incorrect answers and reteach the relevant areas if necessary.

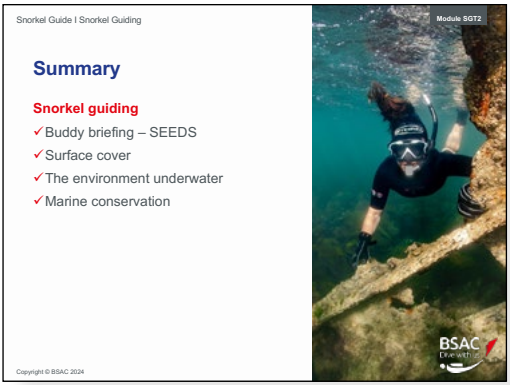
Summary

Quick run through of the intro slide and invite any questions from the students.



Go back

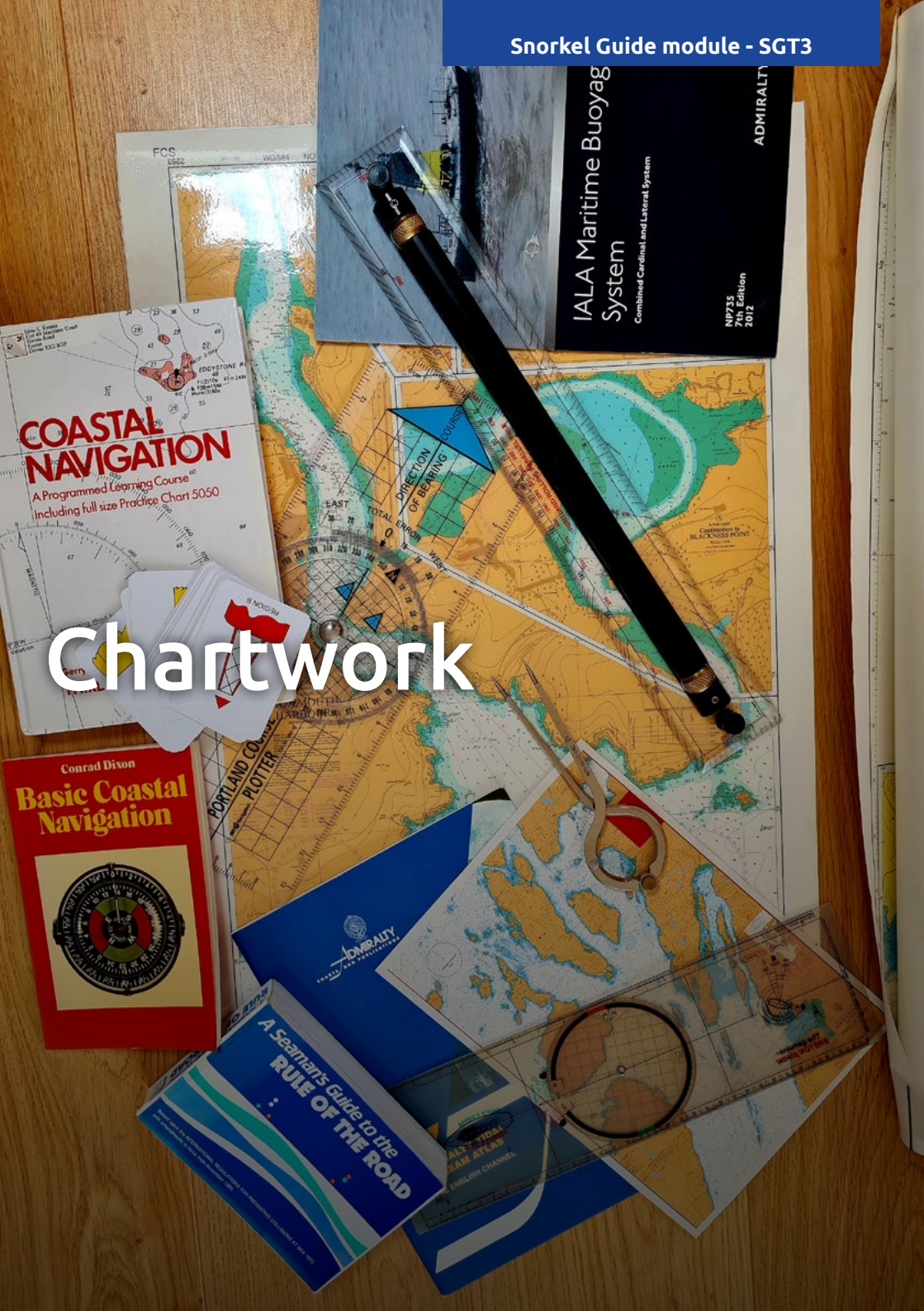
Snorkel Guiding



- ✓ Safe snorkelling
- ✓ Snorkelling in the sea
- ✓ Waves and snorkelling
- ✓ Tides
- ✓ Tides – the moving bulge
- ✓ Tides and snorkelling
- ✓ Water movement – currents
- ✓ Safe snorkelling – the site
- ✓ Buddy system
- ✓ Buddy briefing - SEEDS
- ✓ Surface cover
- ✓ The environment underwater
- ✓ Marine conservation

Any questions?

Students can now do the end of module quiz in their student guide. Answers at the back.

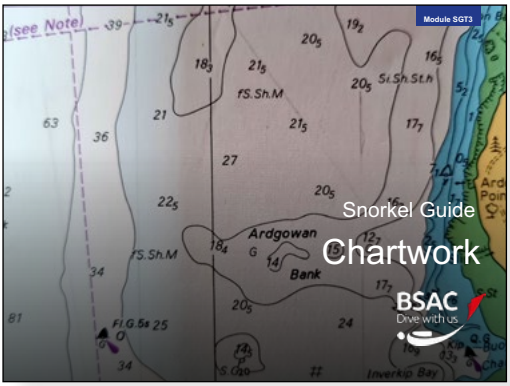

IALA Maritime Buoyage System
Combined Cardinal and Lateral System
ADMIRALTY
NP735
7th Edition
2012
COASTAL NAVIGATION
A Programmed Learning Course
Including full size Practice Chart 5050
Conrad Dixon
Basic Coastal Navigation
A Seaman's Guide to the RULE OF THE ROAD
ADMIRALTY
DIRECTION OF BEARING
COURSE
EAST
WEST
TOTAL ERROR
PLOTTER

Chartwork

Chartwork

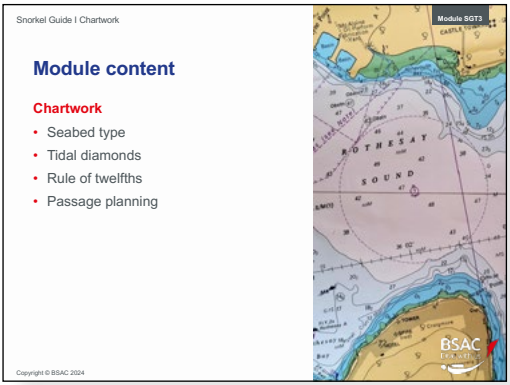
Module content

It is important that you use a chart of the area the snorkel guides will be working in. This should be run as a workshop sitting around a chart table. You will need a Chart 5011, chart of the area, pencil, rubber, dividers and parallel rule / Portland plotter.



Chartwork

- **Seabed type**
- **Tidal diamonds**
- **Rule of twelfths**
- **Passage planning**



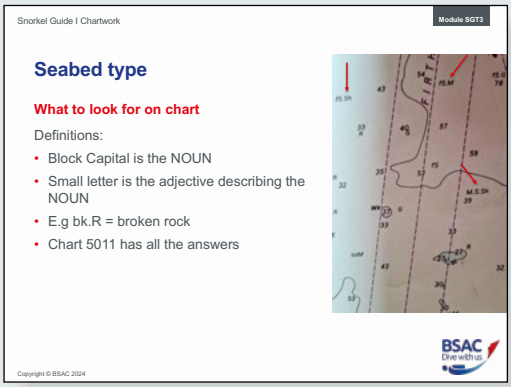
Seabed type

Seabed type is important because you need to know what sites to investigate. There is little point going to an area where the seabed is MUD or SILT as there will be no life and nothing to see. You need to go to rocks, coral and sand or shale for a better experience.

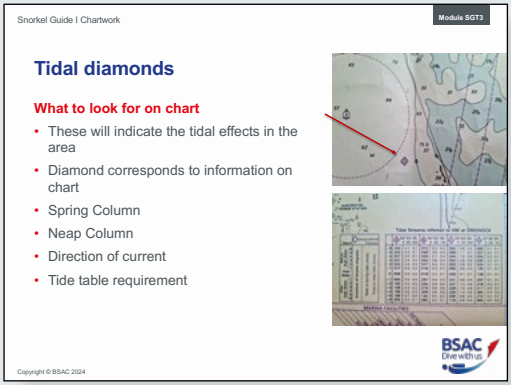
What to look for on chart

Definitions:

- **Block Capital is the NOUN**
- **Small letter is the adjective describing the NOUN**
- **E.g bk.R = broken rock**
- **Chart 5011 has all the answers**



Tidal diamonds



Start this session by identifying a tidal diamond. If there isn't one in your area then show the students a chart which does have one. Then take them to the tidal diamond information. Spring tides will generally have greater water movement. Explain that it is easier to locate the time where there is least water movement and then apply that to the tide table to work out when it is best to go on the water. For example: Least water movement is 0.2 knots for 2 consecutive hours 4 and 5 hours before high water. So go to the tide tables to find a time when this falls within the working day – not too early or late. This is the first stage of planning because if the tides are wrong, there is no point in further planning at this site.

Go back

What to look for on chart

- These will indicate the tidal effects in the area
- Diamond corresponds to information on chart
- Spring column
- Neap column
- Direction of current
- Tide table requirement

Rule of twelfths

A good example where the maths is easy! This is the first part of the working out.

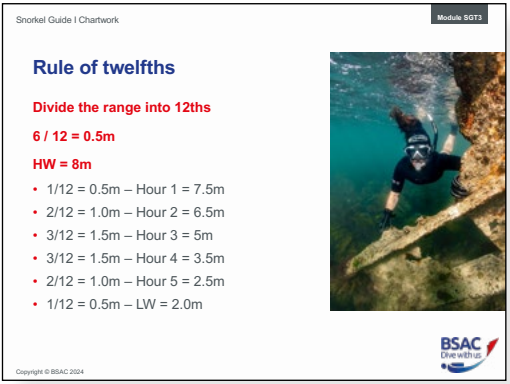
When snorkelling close to the shore the rule of twelfths is a great way of working out what the tide is doing

- HW = 8m at 0600
- LW = 2m at 1200
- Tidal range = 6m

Divide the range into 12ths

6 / 12 = 0.5m

HW = 8m

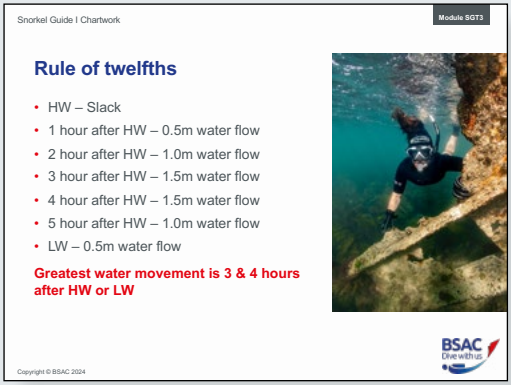


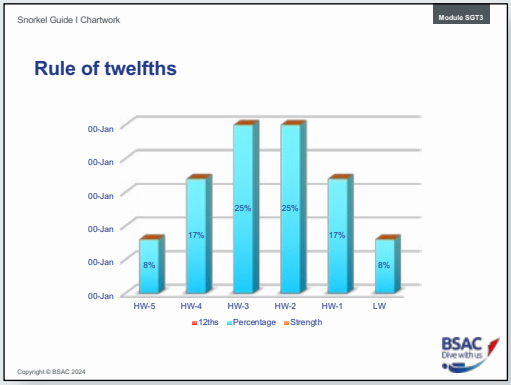
- 1/12 = 0.5m – Hour 1 = 7.5m
- 2/12 = 1.0m – Hour 2 = 6.5m
- 3/12 = 1.5m – Hour 3 = 5m
- 3/12 = 1.5m – Hour 4 = 3.5m
- 2/12 = 1.0m – Hour 5 = 2.5m
- 1/12 = 0.5m – LW = 2.0m

A good example where the maths is easy!

- HW – Slack
- 1 hour after HW – 0.5m water flow
- 2 hour after HW – 1.0m water flow
- 3 hour after HW – 1.5m water flow
- 4 hour after HW – 1.5m water flow
- 5 hour after HW – 1.0m water flow
- LW – 0.5m water flow

Greatest water movement is 3 and 4 hours after HW or LW

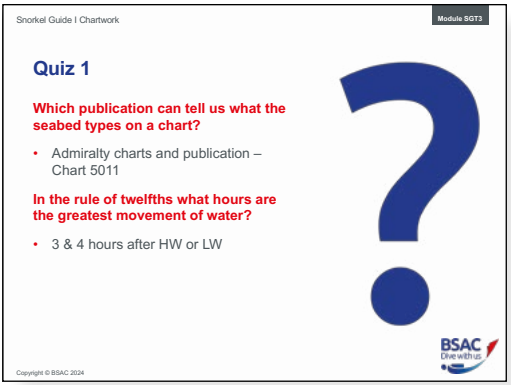




Go back

Quiz 1

Instructors should routinely check for transfer of knowledge to the students. This can be done by asking an open question such as:



Which publication can tell us what the seabed types on a chart?

- **Admiralty charts and publication – Chart 5011**

In the rule of twelfths what hours are the greatest movement of water?

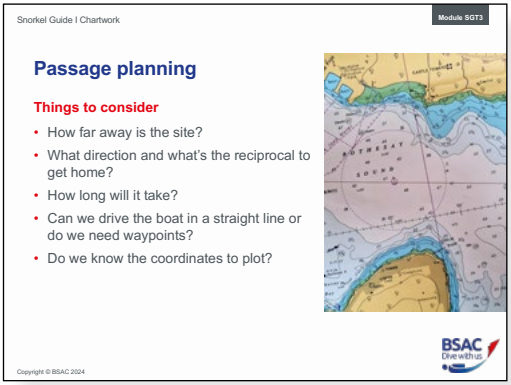
- **3 and 4 hours after HW or LW**

Correct any incorrect answers and reteach the relevant areas if necessary.

Passage planning

Things to consider

- **How far away is the site?**
  Pinpoint on the chart where the snorkel site is.
- **What direction and what's the reciprocal to get home?**



Use the Portland Plotter to determine the compass bearing to head on.

- **How long will it take?**
  Determine the distance of each waypoint by using the dividers to check against the scale at the side of the chart. 1 degree = 1 nautical mile.
- **Can we drive the boat in a straight line or do we need waypoints?**
  Draw a line from the start point to the location. Create a waypoint if required.
- **Do we know the coordinates to plot?**
  Teach the confirmation of Latitude and Longitude and how to plot this on your passage plan.

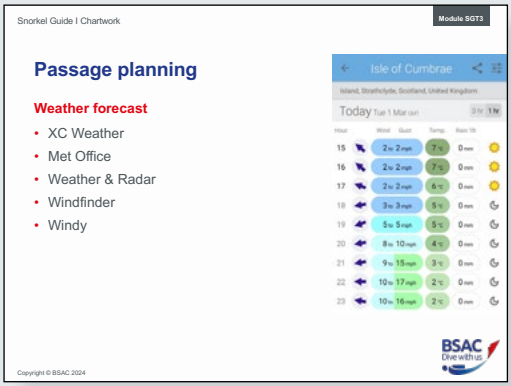
Weather forecast

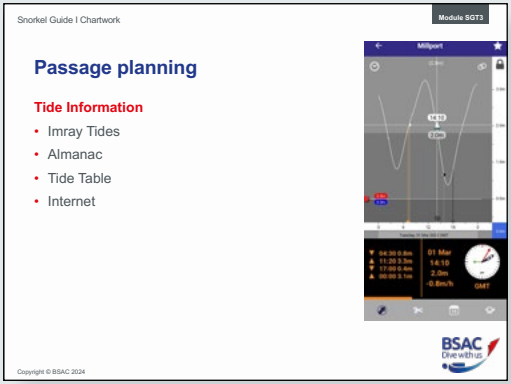
Note that there are plenty of apps these days so there is NO EXCUSE not to know what the weather is doing.

- **XC Weather**
- **Met Office**
- **Weather & Radar**
- **Windfinder**
- **Windy**

Tide information

- **Imray Tides**
- **Almanac**
- **Tide Table**
- **Internet**





Go back

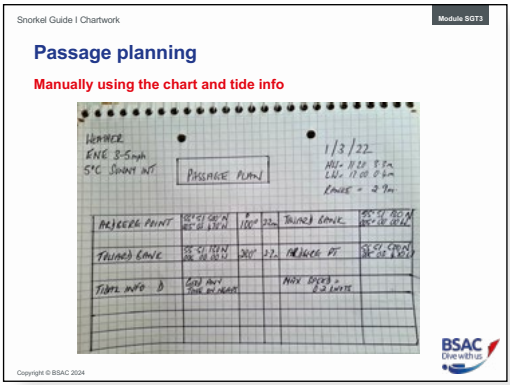
Manually using the chart and tide info

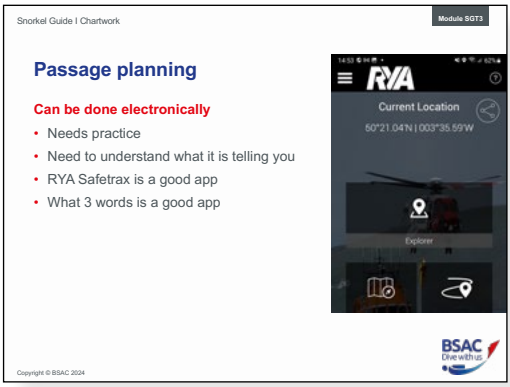
Take the students through the build up of a passage plan manually using a chart.

Can be done electronically

If the centre is going to be using a GPS to get from A to B – make sure someone knows how to plot the Lat and Long coordinates to the GPS and also that the chart data matches the GPS settings (WGS84).

- **Needs practice**
- **Need to understand what it is telling you**
- **RYA Safetrax is a good app**
- **What 3 words is a good app**

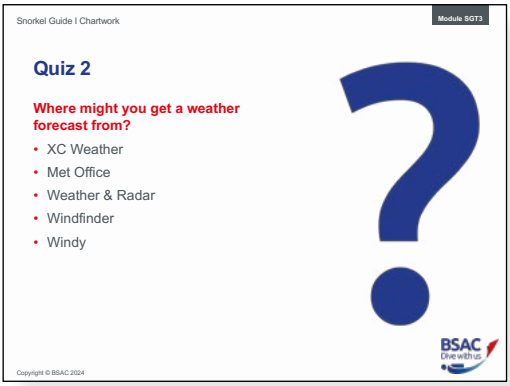




Quiz 2

Where might you get a weather forecast from?

- **XC Weather**
- **Met Office**
- **Weather & Radar**

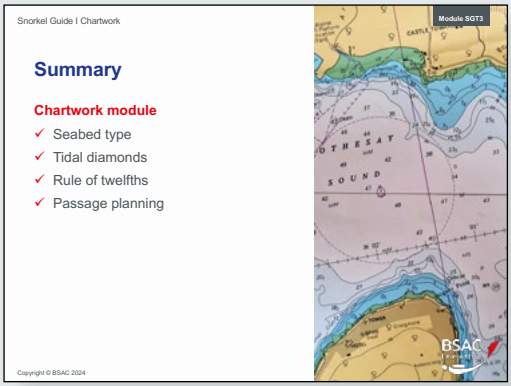


- **Windfinder**
- **Windy**

Correct any incorrect answers and reteach the relevant areas if necessary.

Summary

Quick run through of the intro slide and invite any questions from the students. There is a practical session on chartwork later on the course.



Chartwork module

- ✓ **Seabed type**
- ✓ **Tidal diamonds**
- ✓ **Rule of twelfths**
- ✓ **Passage planning**

Any questions?

Students can now do the end of module quiz in their student guide. Answers at the back.

Go back

Snorkelling sites

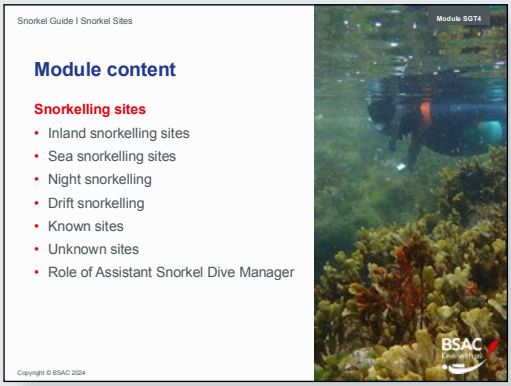
Snorkelling sites

Module content

This module will give the students an idea of sites other than their local area and what to expect.

Snorkelling sites

- **Inland snorkelling sites**
- **Sea snorkelling sites**
- **Night snorkelling**
- **Drift snorkelling**
- **Known sites**
- **Unknown sites**
- **Role of Assistant Snorkel Dive Manager**

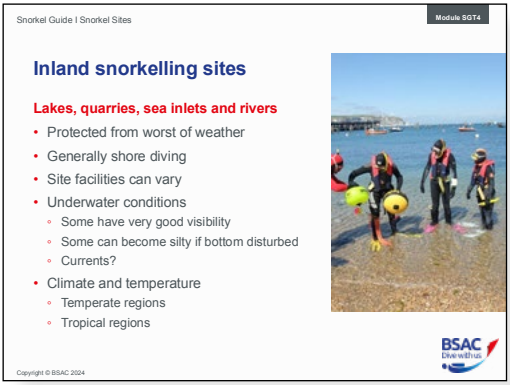


Inland snorkelling sites

These are great sites for training but they can sometimes be devoid of marine life. They can be colder with thermoclines near the surface – just where we will be snorkelling. Some of the lochs can carry a layer of fresh water over salt water depending on rainfall amounts and this can create a blurry sensation.

Go back

Lakes, quarries, sea inlets and rivers



- Protected from worst of weather
- Generally shore diving
- Site facilities can vary
- Underwater conditions
  - » Some have very good visibility
  - » Some can become silty if bottom disturbed
  - » Currents?
- Climate and temperature
  - » Temperate regions
  - » Tropical regions

Sea snorkelling sites

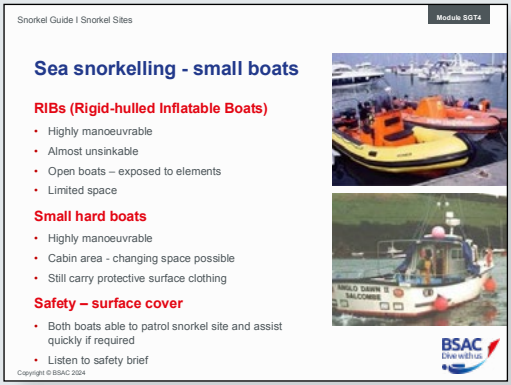
Ocean

Sea snorkelling is the best experience but it carries some problems. You never know what you are going to see. As the sea gets warmer during the course of the year, it can invite plankton blooms which are great for basking shark action but you may not be able to see them coming. Other aspects like facilities etc have already been covered in earlier modules.

- **Huge variety of types of site and marine life**
  - » **Seabed – sandy, rocky, pebbly**
  - » **Features – reefs, walls, wrecks**
  - » **Currents?**
- **Open to the elements**
  - » **Surface conditions can vary**
  - » **Temperate or tropical – thermal or sun protection**
- **Effects of tides and currents**
- **Underwater visibility can vary**
  - » **Wave action**
  - » **The sea's 'seasons' – plankton blooms**

Sea snorkelling - small boats

There are many different boats out there – small, large, slow, fast, planing, cruising. What's important is that the skipper is qualified, gives a safety brief on how to get in and out, where the emergency first aid equipment is and what to do in the event of an emergency if the skipper is incapacitated. They should also be or appoint the surface lookout and work in conjunction with the snorkel dive manager.



Go back

RIBs (Rigid-hulled Inflatable Boats)

- Highly manoeuvrable
- Almost unsinkable
- Open boats – exposed to elements
- Limited space

Small hard boats

- Highly manoeuvrable
- Cabin area - changing space possible
- Still carry protective surface clothing

Safety – surface cover

- Both boats able to patrol snorkel site and assist quickly if required
- Listen to safety brief

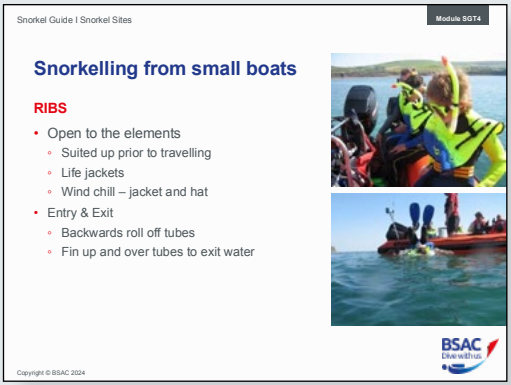
Snorkelling from small boats

Different boats have different methods of getting on and off them. Most small boats such as RIBs will involve rolling in backwards and then finning up over the tubes back into the boat. Any weightbelts should be removed and the rest of the kit kept in place in case you fall back in to the water.

Note that if you are snorkelling off a small RIB in the UK, you may well catch cold so it is important to bring clothing or coverage to keep you warm after the snorkel dive. These boats can go at high speeds and can often involve a wet ride home!

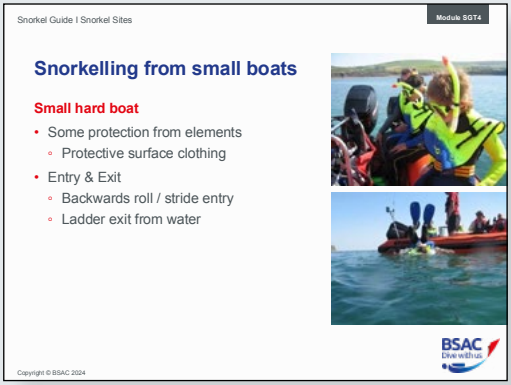
RIBs

- Open to the elements
  - Suited up prior to travelling
  - Life jackets
  - Wind chill – jacket and hat
- Entry & Exit
  - Backwards roll off tubes
  - Fin up and over tubes to exit water



Small hard boat

- Some protection from elements
  - Protective surface clothing
- Entry & Exit
  - Backwards roll /stride entry
  - Ladder exit from water



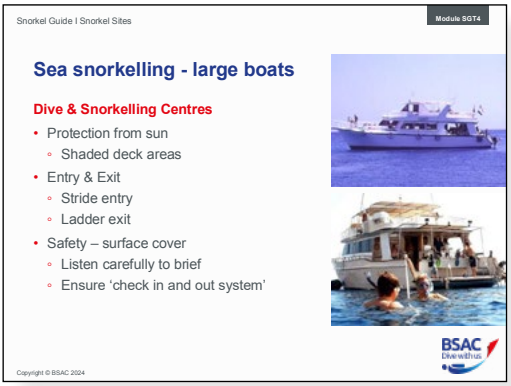
Sea snorkelling - large boats

Luxury – these are mainly found abroad and offer a home away from home. There is a high chance of getting burnt in the sun so it is a good idea to cover up with a rash vest. There should always be a brief and there may well be a tagging system if there are lots of snorkellers – to ensure everyone is back on the boat before it moves away from the snorkel site.

Go back

Dive & Snorkelling Centres

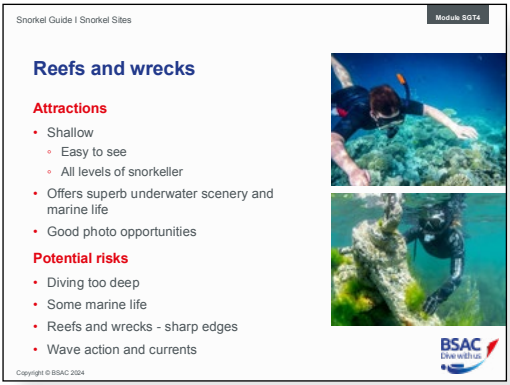
- Protection from sun
  - » Shaded deck areas
- Entry & Exit
  - » Stride entry
  - » Ladder exit
- Safety – surface cover
  - » Listen carefully to brief
  - » Ensure ‘check in and out system’



Reefs and wrecks

Attractions

There are plenty of shallow reefs and wrecks that can be seen from the surface and they offer an abundance of wildlife and photo opportunities.



- Shallow
  - » Easy to see
  - » All levels of snorkeller
- Offers superb underwater scenery and marine life
- Good photo opportunities

Potential risks

There are some risks where the visibility is good, and the marine life

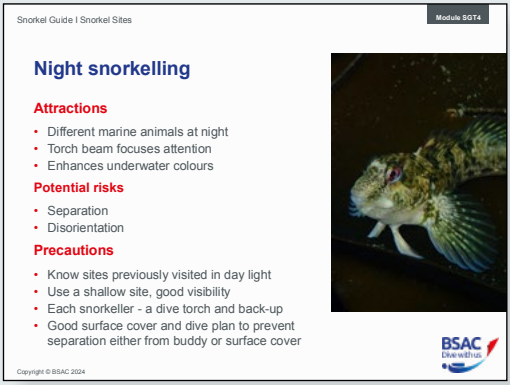
is deeper, to snorkel dive down to have a look – and everything looks bigger and closer than it really is through the lens of the mask and so you could be tempted to go that little bit deeper. There are also jagged edges on wrecks and potentially dangerous marine life that could bite or sting.

There could be local currents round a wreck or reef that are unexpected.

- **Diving too deep**
- **Some marine life**
- **Reefs and wrecks - sharp edges**
- **Wave action and currents**

Night snorkelling

Everyone likes a night snorkel and it is a great thing to do but it brings plenty of risks over the attractions.



Attractions

- **Different marine animals at night**
- **Torch beam focuses attention**
- **Enhances underwater colours**

Potential risks

While we are focusing on an animal or plant we are not paying

Go back

attention to our buddy and we can very quickly become separated. So it's important to know what to do in the event of separation.

- **Separation**
- **Disorientation**

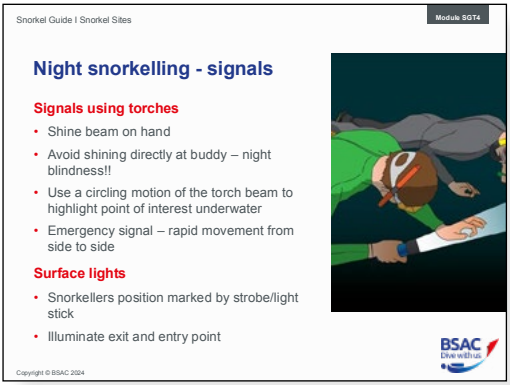
Precautions

There are things we can do to help us such as each buddy pairing having a colour-coded glow stick to differentiate them from the next pair. What is important is that each pair have between them a torch each and a backup torch so that there is no risk of losing light.

- **Know sites previously visited in day light**
- **Use a shallow site, good visibility**
- **Each snorkeller - a dive torch and back-up**
- **Good surface cover and dive plan to prevent separation either from buddy or surface cover**

Night snorkelling - signals

It is mandatory to add this to the brief as it is very easy to forget this and shine the torch in someone's eyes if you see something exciting or feel panicked. If snorkelling close to the shore, a trail to follow along the rocks can be laid on the land so that snorkellers know where they are and where the turn round point is.



Signals using torches

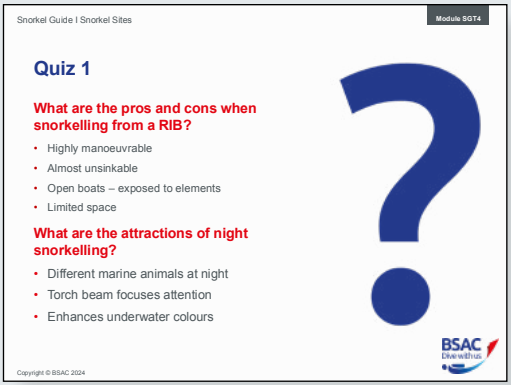
- Shine beam on hand
- Avoid shining directly at buddy – night blindness!!
- Use a circling motion of the torch beam to highlight point of interest underwater
- Emergency signal – rapid movement from side to side

Surface lights

- Snorkellers position marked by strobe/light stick
- Illuminate exit and entry point

Quiz 1

Instructors should routinely check for transfer of knowledge to the students. This can be done by asking an open question such as:



What are the pros and cons when snorkelling from a RIB?

- Highly manoeuvrable
- Almost unsinkable
- Open boats – exposed to elements
- Limited space

What are the attractions of night snorkelling?

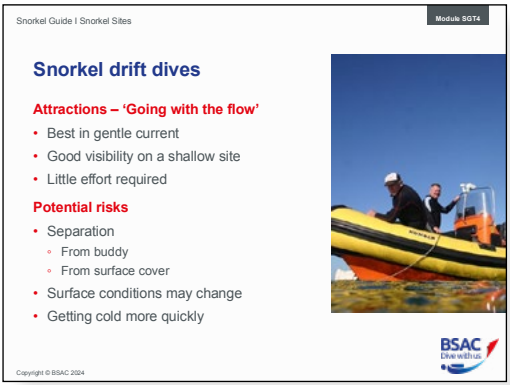
Go back

- **Different marine animals at night**
- **Torch beam focuses attention**
- **Enhances underwater colours**

Correct any incorrect answers and reteach the relevant areas if necessary.

Snorkel drift dives

As long as the water is warm, the drift is gentle (less than 1 knot) and there is good surface cover following you, snorkel drift diving is a lovely way of seeing the underwater world without getting tired. Because there is little effort you will become cold more quickly, which means a shorter time in the water is required.



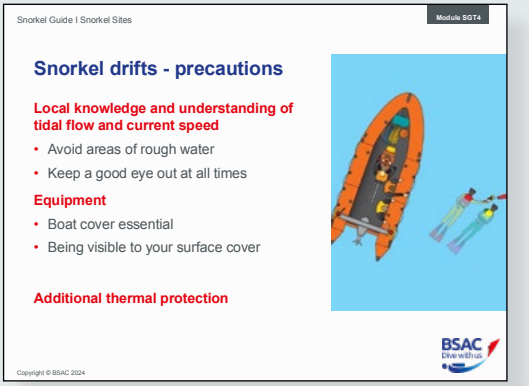
Attractions – 'going with the flow'

- **Best in gentle current**
- **Good visibility on a shallow site**
- **Little effort required**

Potential risks

- **Separation**
  - » **From buddy**
  - » **From surface cover**
- **Surface conditions may change**
- **Getting cold more quickly**

Snorkel drifts - precautions



It is imperative that research into the tides and what way the water is flowing is carried out. You don't want the group to be drifting out in to the open sea nor into a rocky area near the beach. The boat cover must be on watch at all times and ready to pick up the group if there is any reason to abort the snorkel trip. There may be a 'race' which will be a dangerous place for snorkellers to be and so the local site knowledge is very important.

Local knowledge and understanding of tidal flow and current speed

- **Avoid areas of rough water**
- **Keep a good eye out at all times**

Equipment

- **Boat cover essential**
- **Being visible to your surface cover**
- **Additional thermal protection**

Go back

Wreck protection

If you are able to surface dive for long enough to recover any wreck then it is important to follow the guidelines.

BSAC Wreck Policy

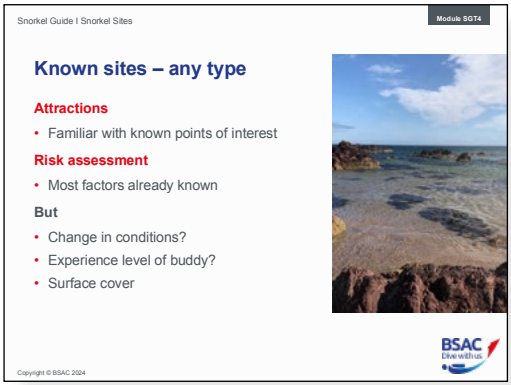
Liaison with other diving agencies and Receiver of Wreck from Maritime and Coastguard Agency

'Protect our Wrecks'

- **Look but don't touch**
- **Reporting recovered finds to the Receiver of Wreck**

Known sites – any type

It is easy to become complacent when always using the same site. But conditions change on a daily basis. Make sure the site is regularly risk assessed to include any alterations such as a rip tide appearing or the beach sands shifting to produce a localised current or deep water closer to shore.



Attractions

- Familiar with known points of interest

Risk assessment

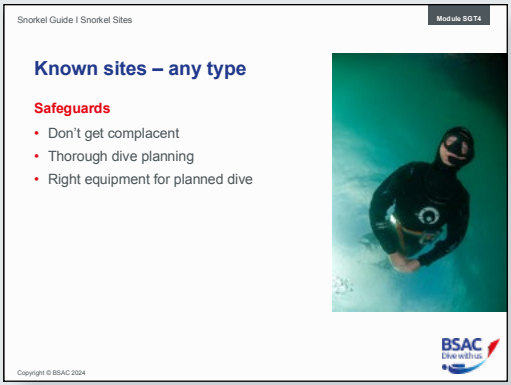
- Most factors already known

But

- Change in conditions?
- Experience level of buddy?
- Surface cover

Safeguards

- Don’t get complacent
- Thorough dive planning
- Right equipment for planned dive



Unknown sites – any type

Unknown snorkel sites are worthy of investigation but research must be done thoroughly to ensure a safe and enjoyable experience. Chartwork, tides, weather, local information from other water users and a responsibility on your part will make it a safe experience.

Go back

Attractions

- Exploration and discovery

Risk assessment

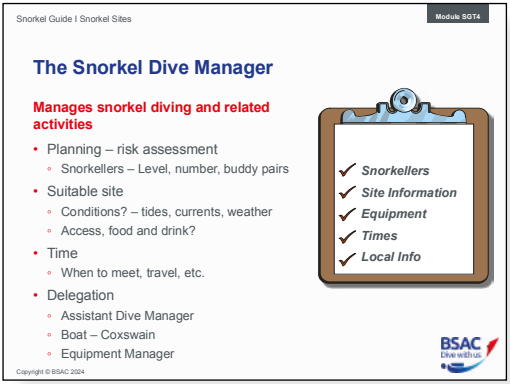
- Type of site
- Anticipated conditions
- Surface cover

Safeguards

- As much site information as possible
- Experience level of snorkellers

The Snorkel Dive Manager

This is a separate module but suffice to say that a Snorkel Dive Manager should be present at all times for all snorkel activities. They will be experienced and have a responsibility to stop the activity if they feel the conditions are not appropriate.



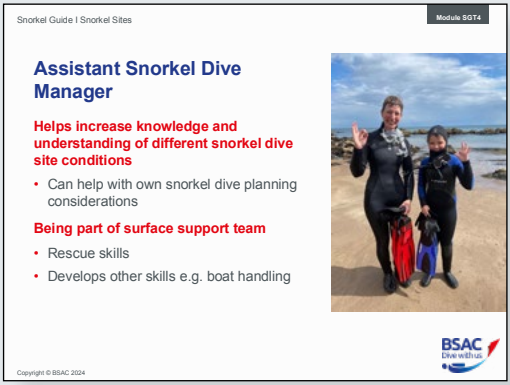
Manages snorkel diving and related activities

- Planning – risk assessment
  - » Snorkellers – level, number, buddy pairs

- **Suitable site**
  - » **Conditions? – tides, currents, weather**
  - » **Access, food and drink?**
- **Time**
  - » **When to meet, travel, etc.**
- **Delegation**
  - » **Assistant Dive Manager**
  - » **Boat – Coxswain**
  - » **Equipment Manager**

Assistant Snorkel Dive Manager

There may also be an assistant who may be someone learning to become a Snorkel Dive Manager or just someone who can help out and keep a look out for the group.



Helps increase knowledge and understanding of different snorkel dive site conditions

- **Can help with own snorkel dive planning considerations**

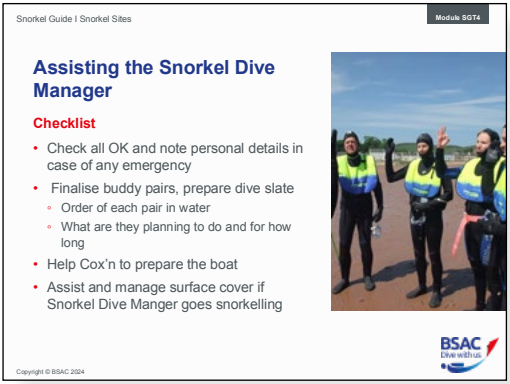
Being part of surface support team

- **Rescue skills**
- **Develops other skills e.g. boat handling**

Go back

Assisting the Snorkel Dive Manager

The Snorkel Dive Manager will be delighted to have any help so always ask if you can but only if it does not impede what you need to do. If you are snorkelling in a tight window of a slack tide then stick to what you need to do to prepare to get into the water. You don't want to be held up or hold the rest of the group up and they miss slack water.



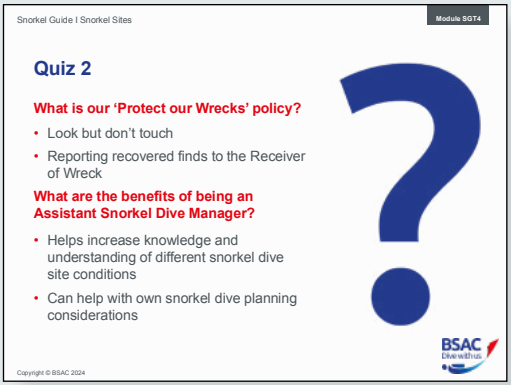
Checklist

- **Check all OK and note personal details in case of any emergency**
- **Finalise buddy pairs, prepare dive slate**
  - **Order of each pair in water**
  - **What are they planning to do and for how long**
- **Help Cox'n to prepare the boat**
- **Assist and manage surface cover if Snorkel Dive Manger goes snorkelling**

Quiz 2

What is our 'Protect our Wrecks' policy?

- Look but don't touch
- Reporting recovered finds to the Receiver of Wreck



What are the benefits of being an Assistant Snorkel Dive Manager?

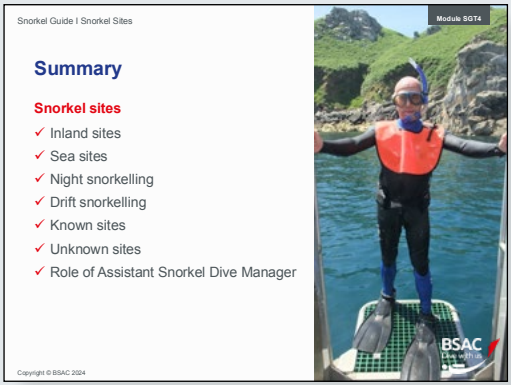
- Helps increase knowledge and understanding of different snorkel dive site conditions
- Can help with own snorkel dive planning considerations

Correct any incorrect answers and reteach the relevant areas if necessary.

Summary

Snorkel sites

- ✓ Inland sites
- ✓ Sea sites
- ✓ Night snorkelling
- ✓ Drift snorkelling
- ✓ Known sites

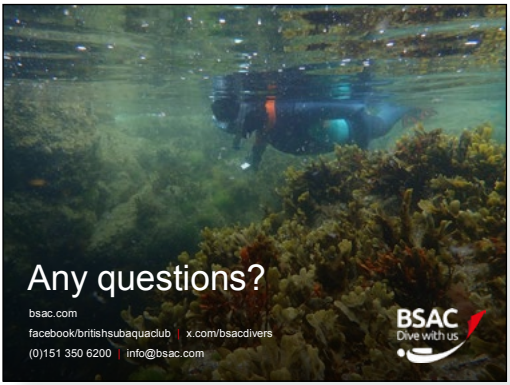


Go back

- ✓ **Unknown sites**
- ✓ **Role of Assistant Snorkel Dive Manager**

Any questions?

Students can now do the end of module quiz in their student guide. Answers at the back.



Equipment for Snorkel Guides

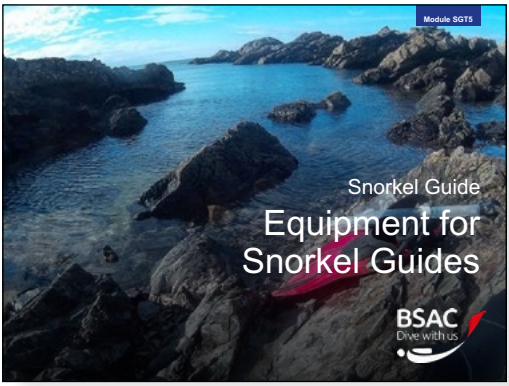
Equipment for Snorkel Guides

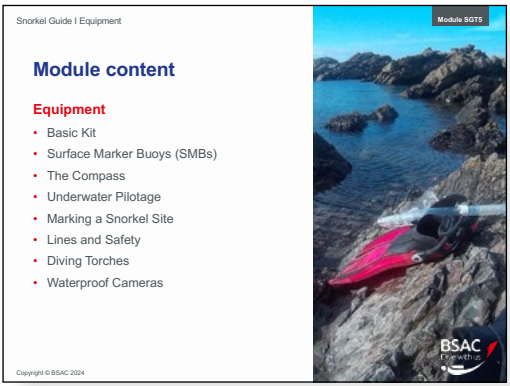
Module content

This lesson will cover equipment that will help Snorkel Guides.

Equipment

- Basic Kit
- Surface Marker Buoys (SMBs)
- The Compass
- Underwater Pilotage
- Marking a Snorkel Site
- Lines and Safety
- Diving Torches
- Waterproof Cameras





Aims and objectives

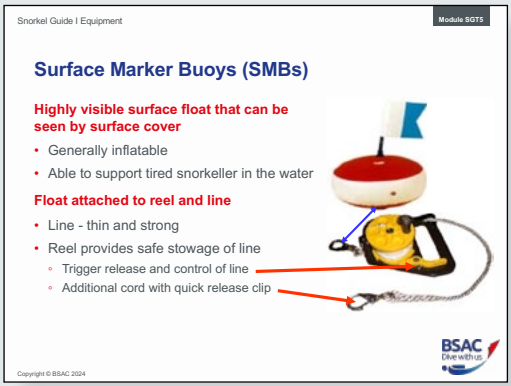
Equipment required by Snorkel Guides

Introduce the module and make sure you have examples (the real thing) with you to show the student group.

- **Basic Kit**
- **Surface Marker Buoys (SMBs)**
- **The compass**
- **Datum lines**
- **Safety when using lines**
- **Torches**
- **Cameras**

Surface Marker Buoys (SMBs)

Bring in and construct an SMB with reel and A Flag if you have one. Other substitutes could be a long orange or yellow SMB attached to a reel. Ensure the reel can be quickly released in case of a snagging event and have a look at attaching a strobe / cyalume or torch to the top end for night snorkelling activities.



Go back

Highly visible surface float that can be seen by surface cover

- Generally inflatable
- Able to support tired snorkeller in the water

Float attached to reel and line

- Line - thin and strong
- Reel provides safe stowage of line
  - » Trigger release and control of line
  - » Additional cord with quick release clip

When to use an SMB

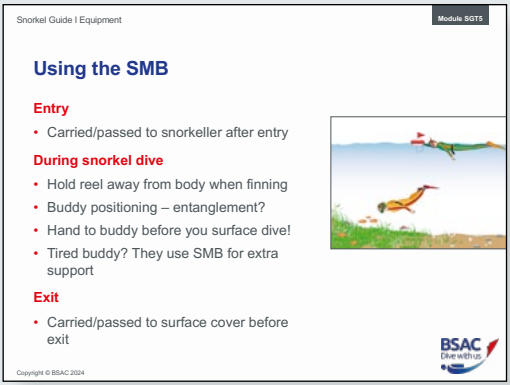
It is very important that everyone has a surface marker buoy to hand for snorkel guiding. It is not expected that the buddy pairs will have one or have the experience to use one. The group need to be visible and if this means a guide at each end then so be it.

Decision of the Snorkel Dive Manager SMBs must be used

- If travel anticipated some way from entry point
- In areas where local regulations require use
- If significant surface traffic anticipated
- Snorkel drift dives

Using the SMB

It may be that the surface cover requires each buddy pair to carry an SMB, so there may be some tips to pass on to the snorkellers, such as how to hold the reel so that it does not become a snagging hazard and ensuring that the buddy can get to it to hold on for support for any reason.



Entry

- **Carried/passed to snorkeller after entry**

During snorkel dive

- **Hold reel away from body when finning**
- **Buddy positioning – entanglement?**
- **Hand to buddy before you surface dive!**
- **Tired buddy? They use SMB for extra support**

Exit

- **Carried/passed to surface cover before exit**

Go back

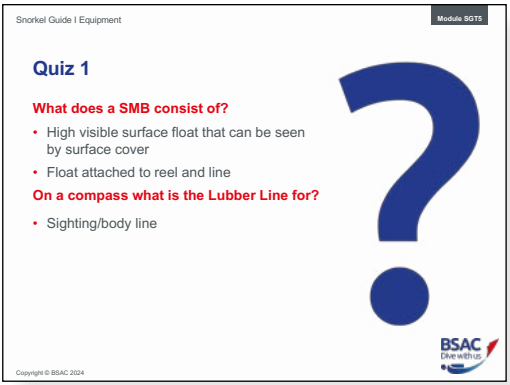
Quiz 1

What does a SMB consist of?

- Highly visible surface float that can be seen by surface cover
- Float attached to reel and line

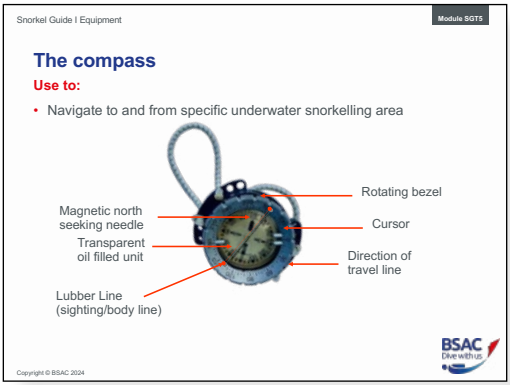
On a compass what is the Lubber Line for?

- Sighting/body line



The compass

Using a compass is helpful if you lose sight of land owing to sudden loss of visibility (planning and weather forecasting?). This will be covered in the practical session so make sure you have a compass with you.

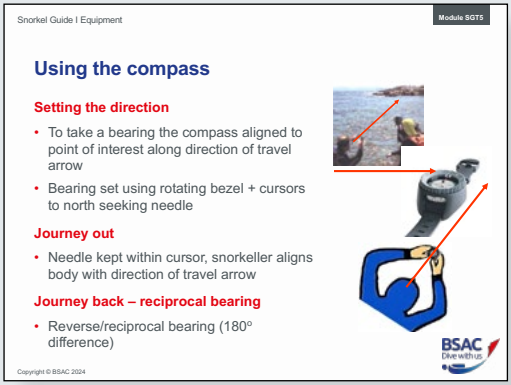


Use to:

- Navigate to and from specific underwater snorkelling area

Using the compass

This will be done as a practical demonstration.



Setting the direction

- **To take a bearing, the compass is aligned to the point of interest along the direction of travel arrow**
- **Bearing set using rotating bezel and cursors to north seeking needle**

Journey out

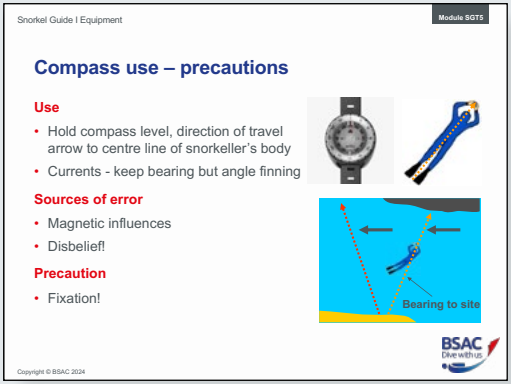
- **Needle kept within cursor, snorkeller aligns body with direction of travel arrow**

Journey back – reciprocal bearing

- **Reverse/reciprocal bearing (180º difference)**

Compass use – precautions

Compass error is usually done by the human using it and not the compass itself. Keep it level, trust it and remember that whilst you are using it, you still need to be aware of your surroundings and your buddy.



Go back

Use

- Hold compass level, direction of travel arrow to centre line of snorkeller's body
- Currents - keep bearing but angle finning

Sources of error

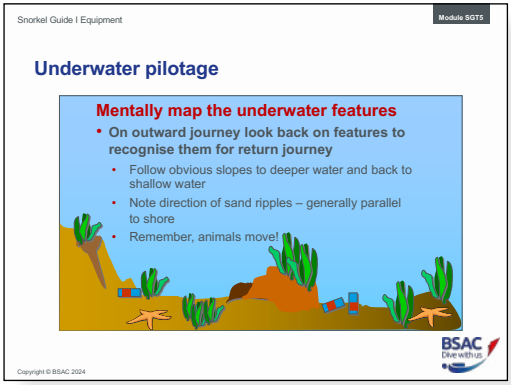
- Magnetic influences
- Disbelief!

Precaution

- Fixation!

Underwater pilotage

Just like being on land - if you mentally remember where you are by looking for features that stick out, then you should be able to return using your mentally mapped features.

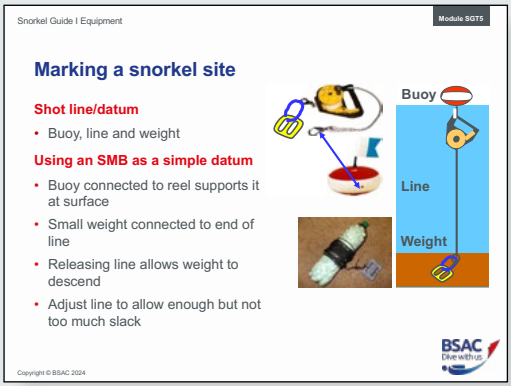


Mentally map the underwater features

- On outward journey look back on features to recognise them for return journey
  - » Follow obvious slopes to deeper water and back to shallow water
  - » Note direction of sand ripples – generally parallel to shore
  - » Remember, animals move!

Marking a snorkel site

Once you get to the site, it may be a good idea to mark it using your SMB. You can do this by dropping down a small weight on the end of the line – then everyone knows to stay in the one area. Bring a reel and SMB set up to show to your students.



Shot line/datum

- **Buoy, line and weight**

Using an SMB as a simple datum

- **Buoy connected to reel supports it at surface**
- **Small weight connected to end of line**
- **Releasing line allows weight to descend**
- **Adjust line to allow enough but not too much slack**

Lines and safety

It is always a good idea to carry cutting equipment just in case someone gets snagged in fishing line. There are many different types so bring in a selection for the students to see.

Go back

Precautions

- Sharp knife
- Scissors
- Net cutter for thin line
- Lanyard to prevent loss
- Deploy lines at arms length and keep fins clear
- Avoid finning close to line
- Avoid entanglement with other lines

Diving torches

Diving torches are great for lighting up the area you are snorkelling in as well as mandatory for night snorkelling. There are loads on the market, ranging from small LED to large and battery operated. They need to be waterproof and robust to withstand you jumping in the water, dropping it, dragging it or banging it against something by accident. Wash in fresh water and ensure the O-rings are lubricated and free of sand and dirt.

Illuminates snorkelling site

- Essential for night snorkelling
- Colours, points of interest

Many types

- Batteries or rechargeable
- Inexpensive to expensive models

Qualities

- Waterproof !
- Robust

Care

- O-rings – clean
- Wash in fresh water

Waterproof cameras

Bring in some different cameras, video, sports cams – there are loads on the market these days. Selfie sticks enable you to get close up to the model to be photographed but be aware of getting too close – no prodding.

- Range on the market
- Video and photo
- Require an SD card
- Flash? No flash?
- User friendly

Go back

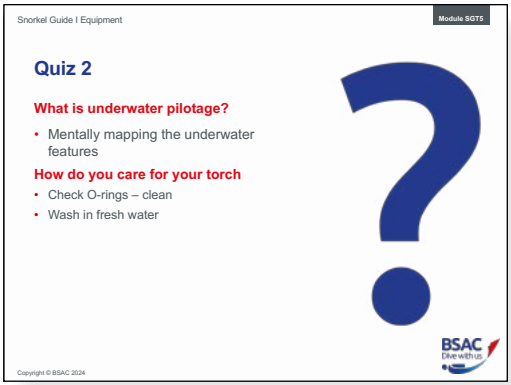
Quiz 2

What is underwater pilotage?

- Mentally mapping the underwater features

How do you care for your torch?

- Check O-rings – clean
- Wash in fresh water

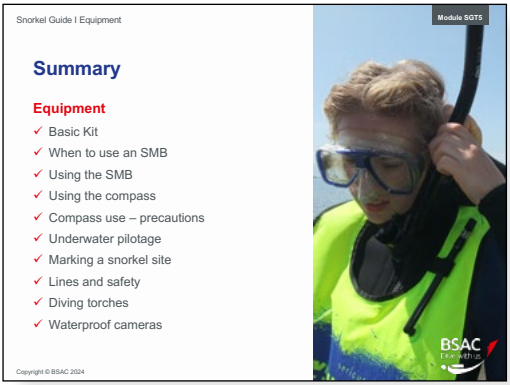


Summary

Ask some questions to check for knowledge transfer then invite questions before moving on.

Equipment

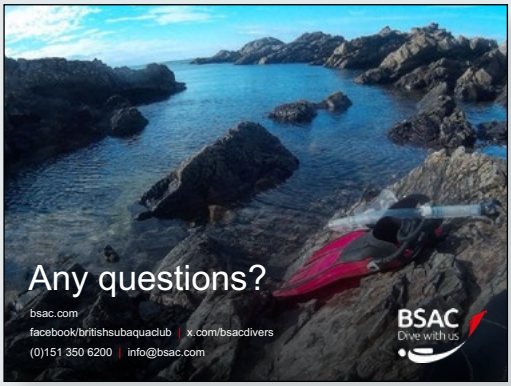
- ✓ Basic Kit
- ✓ When to use an SMB
- ✓ Using the SMB
- ✓ The compass
- ✓ Using the compass
- ✓ Compass use - precautions
- ✓ Underwater pilotage
- ✓ Marking a snorkel site



- ✓ **Lines and safety**
- ✓ **Diving torches**
- ✓ **Waterproof cameras**

Any questions?

Students can now do the end of module quiz in their student guide. Answers at the back.



Go back

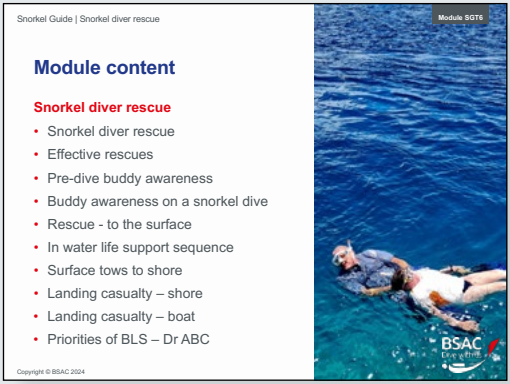
Snorkel diver rescue

Snorkel diver rescue

Module content

Most people will have land-based first aid skills and this will mean that this session will focus on the in water elements of snorkel diver rescue. It is really important that we are effective in our rescue attempts and do our best to ensure the best chance of recovery.

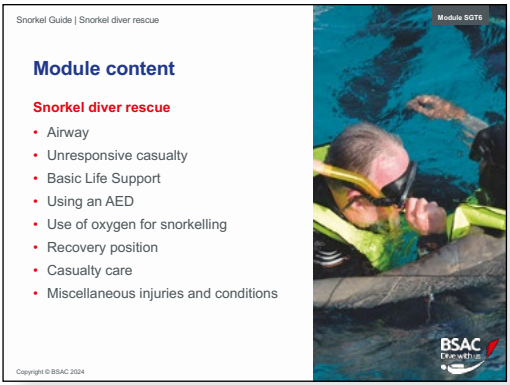
Snorkel diver rescue



- **Snorkel diver rescue**
- **Effective rescues**
- **Pre-dive buddy awareness**
- **Buddy awareness on a snorkel dive**
- **Rescue - to the surface**
- **In water life support sequence**
- **Surface tows to shore**
- **Landing casualty – shore**
- **Landing casualty – boat**

Go back

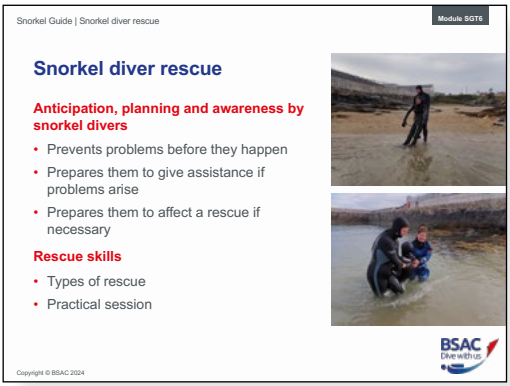
- **Priorities of BLS – Dr ABC**
- **Airway**
- **Unresponsive casualty**
- **Basic Life Support**
- **Using an AED**
- **Use of oxygen for snorkelling**



- **Recovery position – two kinds**
- **Casualty care**
- **Miscellaneous injuries and conditions**

Snorkel diver rescue

The idea is not to let the problem occur in the first place and this is done by good anticipation skills, comprehensive planning and being in a constant state of awareness of our surroundings and fellow snorkellers.



Anticipation, planning and awareness by snorkel divers

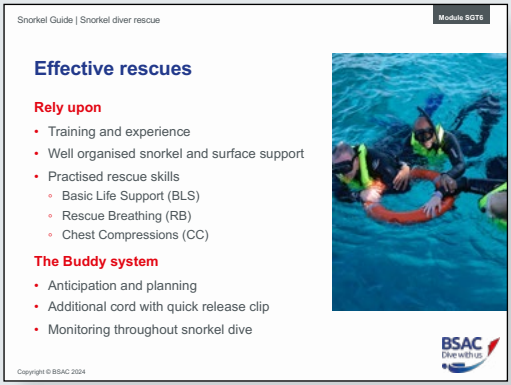
- **Prevents problems before they happen**
- **Prepares them to give assistance if problems arise**
- **Prepares them to effect a rescue if necessary**

Go back

Rescue skills

- Types of rescue
- Practical session

Effective rescues



It is important that we practice our rescue skills on a regular basis so that in the event of an incident, we can act immediately to try to effect a rescue with a positive outcome. If our surface support and our Snorkel Guides are well-trained and practised in first aid and rescue skills, then the likelihood of that rescue being effective goes up. Our snorkel buddies need to look out for each other. Whilst we are not using too much equipment, we should always carry out buddy checks with each other to ensure everything fits and works. The last thing you want is a panicking buddy because their mask keeps flooding, or they keep getting cramp because their fins are too big for them.

Rely upon

- Training and experience
- Well-organised snorkel and surface support
- Practised rescue skills
  - » Basic Life Support (BLS)
  - » Rescue Breathing (RB)
  - » Chest Compressions (CC)

Go back

The Buddy system

- Anticipation and planning
- Additional cord with quick release clip
- Monitoring throughout snorkel dive

Pre-dive buddy awareness

We must brief our snorkel buddy pairs to look out for each other. Watch for signs such as someone who is withdrawn or fiddling with the mask strap constantly. These may be stress indicators. It is worth checking that they are happy with the proposed snorkel dive, and if not, thinking about adapting the plan to suit them better. Some could be drawn into a snorkel excursion because their friend wants to do it when, in fact, the buddy has never snorkelled before. This is peer pressure and should be discouraged.

Typical indications

- Nervous or reluctant
- Excuses or repeated questions
- Stress indicators
- Slow kit up or constant fiddling

Concerns need to be resolved

- Adapt the snorkel dive plan
- More suitable snorkel dive site
- Peer pressure

Buddy awareness on a snorkel dive

Once out on the water, look out for a few indicators such as not signalling back, constantly putting the mask on forehead, breathing harder than expected and maybe wide staring eyes. This is the time to stop the group, check whether there is a problem and if not ok, think about aborting the snorkel dive and returning to dry land. If there are two guides you could consider splitting the group so that those who are ok can carry on – however only if this has been briefed – otherwise it is not in the snorkel dive plan and no one will know what you are doing.

Buddy reactions

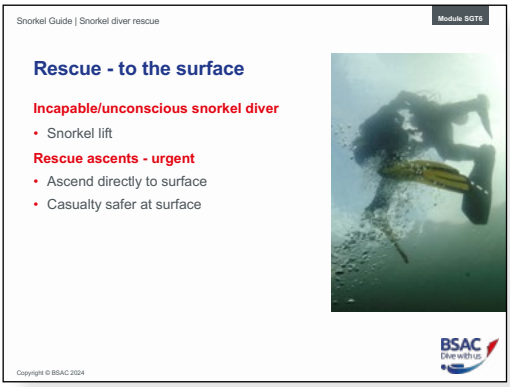
- Stopping for no reason
- Slow response to signals
- Rapid breathing
- Wide staring eyes

Go back

Resolve quickly

- Stop or move to buddy
- OK? Problem?
- Not OK, gentle but firm contact
- Abort snorkel dive

Rescue - to the surface



Rarely, someone may encounter a problem whilst snorkel diving under the water. At this point the rescue will have to be one to the surface. It involves getting close to the casualty and getting your arms under their armpits and finning them up to the surface. Any weightbelts should be removed to assist in the ascent phase. Once on the surface there will be extra help in the rest of the group, other Snorkel Guides or the surface cover.

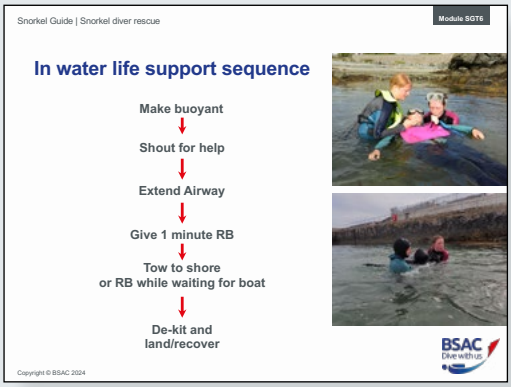
Incapable/unconscious snorkel diver

- Snorkel lift

Rescue ascents - urgent

- Ascend directly to surface
- Casualty safer at surface

In water life support sequence



Making a snorkeller buoyant is generally very easy because they are usually wearing a wetsuit. The neoprene is very buoyant. If they are wearing a weightbelt, remove it using the quick release mechanism, as this will assist in positive buoyancy. Always shout for help as loudly as possible and wave your arm in the air to attract attention. Extend the casualty's airway and remove their mask and snorkel. Give 1 rescue breath every 5 seconds for a minute, then tow them as quickly as possible to the shore and get them out of the water to begin basic life support.

- **Make buoyant**
- **Shout for help**
- **Extend airway**
- **Give 1 minute RB**
- **Tow to shore**
- **De-kit and land/recover**

Surface tows to shore

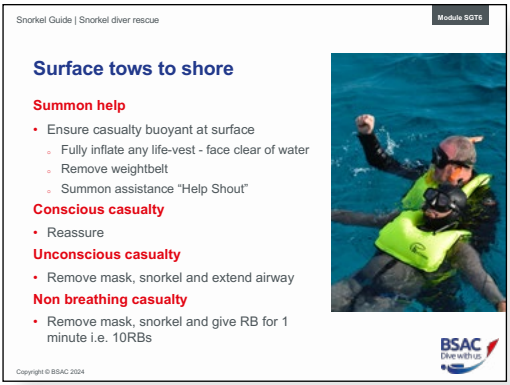
Summon help

- **Ensure casualty buoyant at surface**
  - » **Fully inflate any life-vest - face clear of water**
  - » **Remove weightbelt**
  - » **Summon assistance "Help Shout"**

Go back

Conscious casualty

- **Reassure**
  A conscious casualty can be towed to shore with some verbal reassurance on the way.



Unconscious casualty

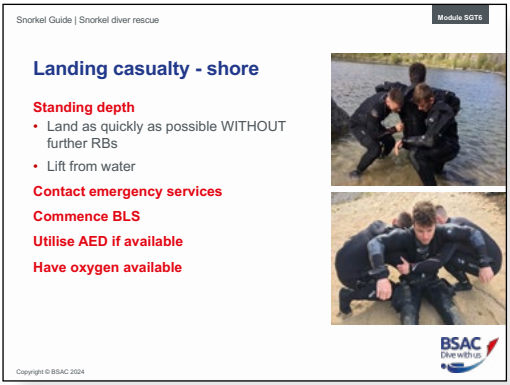
- **Remove mask, snorkel and extend airway**
  Unconscious – may be breathing, so extend their airway, having removed their mask and snorkel and hope that does the trick.

Non breathing casualty

- **Remove mask, snorkel and give RB for 1 minute i.e. 10RBs**
  Unconscious and not breathing normally – give 10 rescue breaths and then start towing.

Landing casualty - shore

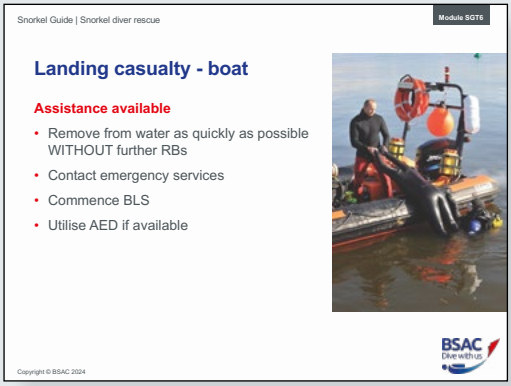
Landing a casualty can be quite hard work, especially if they are bigger and heavier than you – so always get help if you can. At least get their head clear of the water, contact the emergency services by sending for help by whatever means, then begin Basic Life Support (BLS). If you can get hold of a AED then do so.



Standing depth

- Land as quickly as possible WITHOUT further RBs
- Lift from water
- Contact emergency services
- Commence BLS
- Utilise AED if available
- Have Oxygen available

Landing casualty - boat



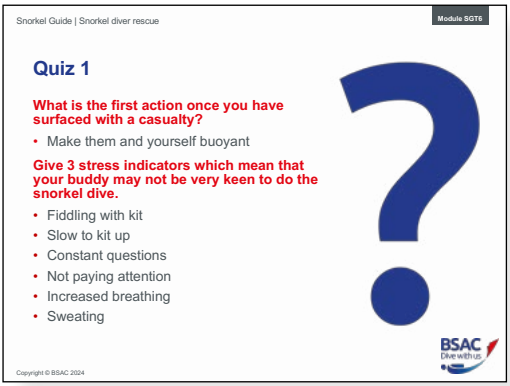
Landing a casualty onto a boat is easier if there are two of you to do this. If there is one person on the boat and you rescuing then get them to support the casualty whilst you exit the water – then you can both pull the casualty in. Always watch their head and try to keep their neck extended as far as possible to allow air to enter the airway. Then BLS is the same, only you may not have as much room as on a shoreline.

Assistance available

- Remove from water as quickly as possible WITHOUT further RBs
- Contact emergency services
- Commence BLS
- Utilise AED if available

Go back

Quiz 1



What is the first action once you have surfaced with a casualty?

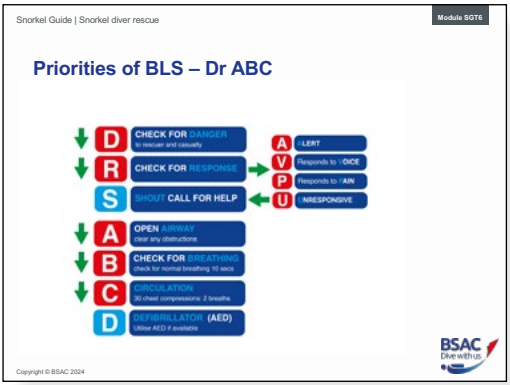
- Make them and yourself buoyant

Give 3 stress indicators which mean that your buddy may not be very keen to do the snorkel dive.

- Fiddling with kit
- Slow to kit up
- Constant questions
- Not paying attention
- Increased breathing
- Sweating

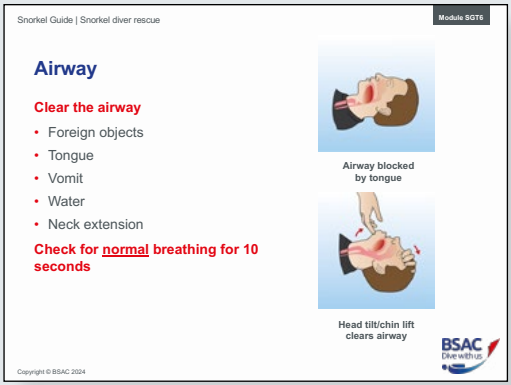
Priorities of BLS – Dr ABC

Anyone with a first aid qualification may (at the instructor's discretion) omit some of this section. It could be used as a recap for everyone to ensure conformity within the group.



Airway

Whilst this is not a pleasant experience, it is vital that we get the airway unblocked to allow air to enter the lungs. The other point to note is to not over extend the airway.

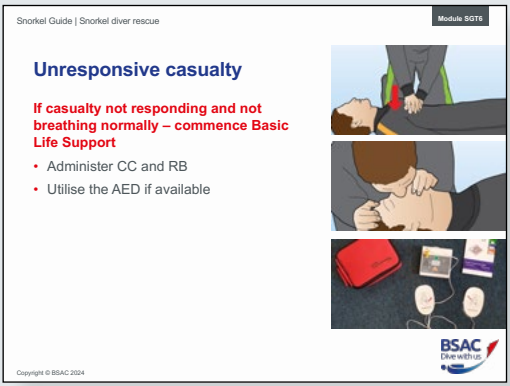


Clear the airway

- **Foreign objects**
- **Tongue**
- **Vomit**
- **Water**
- **Neck extension**
- **Check for normal breathing for 10 seconds**

Unresponsive casualty

When we talk about normal breathing, don't confuse this with what we call agonal breathing which is NOT normal. So any breathing that is NOT normal is going to require chest compressions and rescue breaths.



Go back

If casualty not responding and not breathing normally – commence Basic Life Support

- Administer CC and RB
- Utilise the AED if available

Basic Life Support (BLS)

Don't panic that the AED tells you to stop every now and again – it needs to analyse the casualty's heart to see whether a shock is required.

BLS sequence

- 30 compressions: 2 breaths by one rescuer
- Utilise the AED if available
- Monitor effectiveness

Stop if

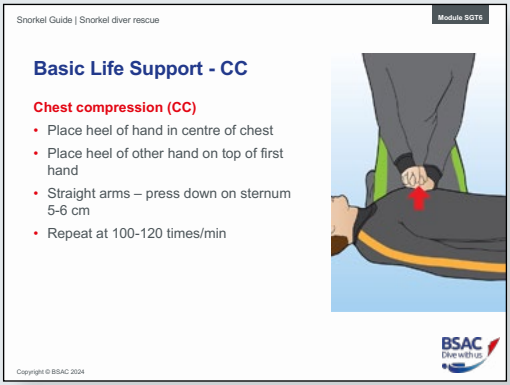
- Normal breathing resumes
- Medical assistance arrives
- Exhausted

Two rescuers

- Change over every 2 minutes

Basic Life Support - CC

If it is a child, then one hand is enough pressure.

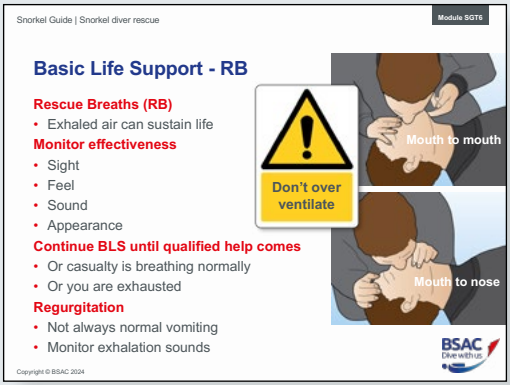


Chest compression (CC)

- **Place heel of hand in centre of chest**
- **Place heel of other hand on top of first hand**
- **Straight arms – press down on sternum 5-6 cm**
- **Repeat at 100-120 times/min**

Basic Life Support - RB

Don't stop unless there is a noticeable change in the casualty. If you feel you cannot give rescue breaths, then carry out chest compressions.



Rescue Breaths (RB)

- **Exhaled air can sustain life**

Monitor effectiveness

- **Sight**
- **Feel**
- **Sound**
- **Appearance**

Go back

Continue BLS until qualified help comes

- Or casualty is breathing normally
- Or you are exhausted

Regurgitation

- Not always normal vomiting
- Monitor exhalation sounds

Basic Life Support – AED

All AEDs should come with a towel, scissors and razor to assist you with this process. When you switch it on – full instructions are audibly given – follow the instructions at all times. Tell everyone to be clear of the casualty if a shock is to be given, then carry on cardiopulmonary resuscitation (CPR). If the heart has gone into defibrillation then the only thing that can reset the pump is an AED.

AED use

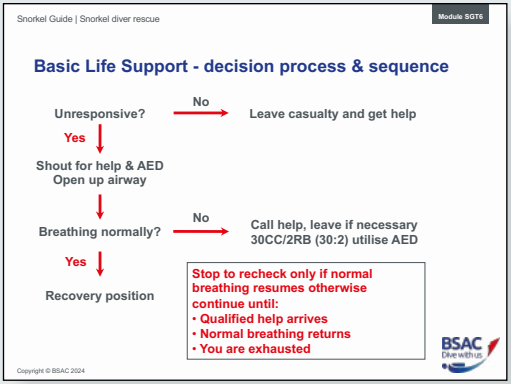
- Casualty's chest must be naked and dry
- Casualty's chest may need to be shaved
- Switch on AED
- Follow AED voice instructions
- AED pads must make a good contact with the casualty's skin (dry and shaved)

Safety

- **Ensure oxygen is removed from casualty before an AED shock is given**
- **Ensure nobody is touching the casualty when AED is analysing rhythm or delivering a shock**

Basic Life Support - decision process & sequence

Hopefully, you won't be in a position where you are on your own. If you send someone else for help, tell them to call 999, bring an AED, and come back to report that they have done this.



Using an AED

According to Resuscitation Council (UK) guidelines.
The methods taught conform to externally recognised guidelines and course certification will reflect this.

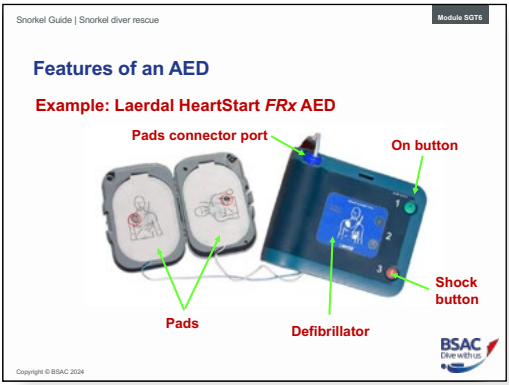
Go back

Defibrillation is the only treatment proven to restore a normal heart rhythm. When used on a casualty in cardiac arrest, the AED can be used to administer a lifesaving electric shock that if delivered quickly enough, can restore the heart's rhythm to normal. AEDs are designed to allow non-medical personnel such as snorkel divers to save lives.

- **Parts and accessories needed**
- **Safe use of an AED**
  The course differs from other courses provided by non-diving agencies in that it will cover the use of the AED in snorkel diving situations
- **Basic Life Support and AED**
- **Protocol**
- **Legal status of rescuers**
- **Routine maintenance**

Features of an AED

Show the students an actual unit. For example: Laerdal HeartStart FRx AED. Instructors may have a different brand of AED unit.



- **Defibrillator**
  The actual defibrillator is a box containing sophisticated electronics which can analyse heart rhythms and generate high voltage electric shocks when these are required. There is also a loudspeaker through which voice prompts are made to instruct the rescuer. Models vary in their resistance to water and knocks and bangs.

- **On button**
  The first step in using the defibrillator is to switch it on, after which it will start giving voice prompts.
- **Pads connector port**
  The pads through which the shock is delivered to the casualty are attached to the defibrillator by a socket. Many models have identical sockets, so it is possible for emergency services to use their more sophisticated machines without reapplying the pads.
- **Pads**
  Self-adhesive pads are kept in a separate case and are usually marked with a diagram as to where on the casualty's chest they should be placed. They may be suitable for use by the professional emergency services so should be left in place until their arrival even if the casualty has recovered before then.
- **Shock button**
  The majority of machines in common use by lay rescuers require the operator to deliver the electric shock by pressing a button when instructed to do so by the voice prompts. A small number of machines are fully automatic and will deliver the shock without intervention by the operator.

Other required equipment

For use generally and specifically in snorkelling environments, additional equipment is required for the safe and effective use of an AED.

Go back

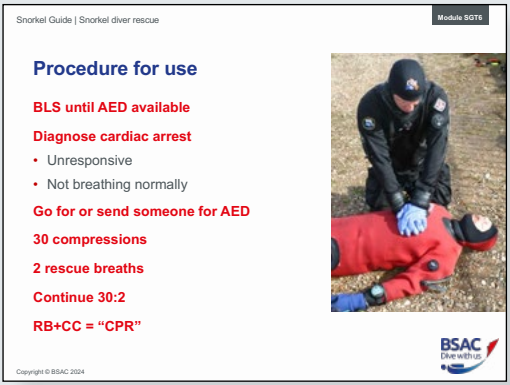
- **Robust, padded & waterproof case**
  Although the machine used in the course is fairly waterproof and resistant to damage, it will require storage in a robust waterproof case if on a boat. This case needs to be clearly marked with the accepted sign for a defibrillator, and the machine should be readily accessible in the event of an emergency. Training machines and materials should be clearly marked and stored separately so as not to be confused with operational machines.
- **Safety shears to cut wetsuit**
  The pads must be applied to the casualty's bare chest and it is necessary to remove the wetsuit and undergarments quickly and effectively. Strong scissors or shears will be needed.
- **Cloth to dry casualty's chest**
  The operation of the AED relies on an electric current passing through the body tissues. Dampness on the skin will allow any electric current to pass between the pads around the body rather than through it.

  Dampness will also reduce the effectiveness of the adhesive of the pads. A small towel packed with the AED will allow drying of the skin to prevent this.
- **Razor to shave chest hair if needed**
  The pads must be closely applied to the skin and large amounts of body hair may prevent a good electrical contact. If this seems likely, the hair should be quickly shaved and a razor is necessary for this.

Procedure for use

BLS until AED available

The procedure for Basic Life Support with which the students are familiar is followed exactly as before. It is for this reason that students must be proficient at current BLS procedures.



Diagnose cardiac arrest

Recap the diagnosis of cardiac arrest; this is very important as this is the indication for the need for an AED.

- **Unresponsive**
  The casualty is not responding to painful stimuli after the rescuer has gone through the 'AVPU' sequence.
- **Not breathing normally**
  Remind students that casualties sustaining a cardiac arrest may make gasps or grunts which must not be confused for normal breathing.

Go for or send someone for AED

Previously students will have been taught to send for help. When an AED is available, the highest priority is getting, attaching and using the AED. If personnel are available help should also be sought at this time.

30 compressions

On diagnosing cardiac arrest, give 30 chest compressions at a rate of 100-120/min, compressing the chest to a depth of 5-6 cm.

Go back

2 rescue breaths

These chest compressions are followed by 2 effective rescue breaths. The two breaths should take no more than 5 seconds.

Continue 30:2

The sequence of 30 chest compressions and 2 rescue breaths should continue until the AED is attached.

RB+CC = 'CPR'

The term BLS is used to encompass the sequence of assessing and removing from danger, diagnosing cardiac arrest, seeking help and the sequence of 30 chest compressions and 2 rescue breaths. Use of CPR, which snorkellers who trained on earlier versions of the DTP may remember, was withdrawn to reduce the expectation that this technique alone will promote full recovery. The introduction of the AED takes resuscitation skills beyond 'basic' life support and 'CPR' is reintroduced because AED voice prompts use it. It continues to mean the combination of chest compressions and rescue breathing.

Attach AED

Once the AED is available at the location of the casualty, CPR should continue until it is attached and ready to use. It is assumed that at least two rescuers are available; in the event of a solo rescuer the priority is to attach the AED.

Switch on

The AED operator removes the AED from its storage and presses the on switch.

Follow voice prompts

As soon as the AED is switched on it will start giving prompts as to what to do next.

Cut wetsuit

It will be necessary to expose the casualty's chest as promptly as possible; this is likely to require cutting of the wetsuit.

Cut wetsuit

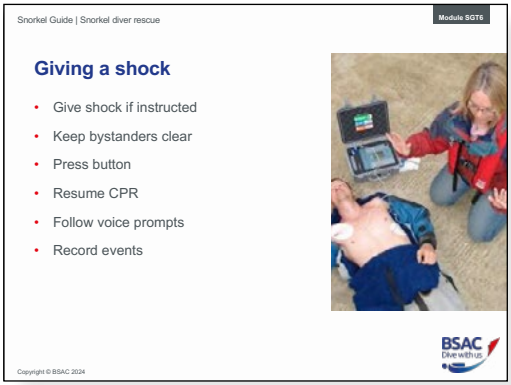
- **Use safety shears**
  These have blunt points and are unlikely to cut the skin.
- **Pull suit seal away from the neck**
- **Cut carefully**
- **Suit first, then any undergarments**
  Students should be reminded that it will be easier to remove the clothing in layers rather than cutting through all at the same time. It is advisable to remove any clothing containing metal parts e.g. wire cupped bras, and any body piercings but do not allow this to cause excessive delay.
- **Avoid suit zip and valves**
- **Fold suit material at the waist**

Go back

Attach AED (cont'd)

- **Dry skin/shave if necessary**
  As described previously, if there is considerable body hair interfering with the placing of the pads, it may be necessary to shave this. Do not do so unless absolutely necessary.
- **Attach pads**
  The pads should be peeled from their storage case and placed as indicated by the diagrams on the pads.
- **Keep following voice prompts**
  Throughout the procedure the AED will give voice prompts to the rescuer and these should be followed. Once the pads are effectively attached the AED will analyse the heart rhythm and give a prompt as to whether a shock is necessary.

Giving a shock



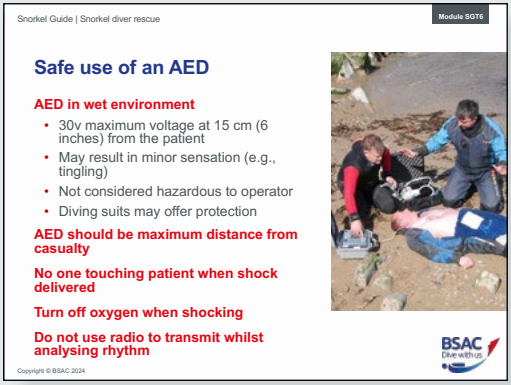
- **Give shock if instructed**
  The voice prompt will indicate if this is necessary. Most machines are not able to give a shock unless it is necessary.
- **Keep bystanders clear**
  It is essential to keep others away from the casualty and make sure no-one is touching the casualty.

- **Press button**
  The shock is delivered in most machines by pressing the shock button.
- **Resume CPR**
  As soon as the voice prompt indicates it is safe to do so, chest compressions and rescue breaths (CPR) should be resumed.
- **Follow voice prompts**
  The cardiac rhythm is unstable and could revert to VF even if the first shock resulted in the casualty breathing spontaneously. The AED will continue to re-analyse the cardiac rhythm every two minutes and indicate whether further shocks are necessary. The AED should remain attached until the emergency services arrive, even if the casualty starts to breathe spontaneously.
- **Record events**
  The Incident Procedure Sheet has space to record the progress of the rescue and the times shocks were given should be recorded. Many AEDs will record the events of the rescue after the pads are applied. These may be downloaded onto suitably equipped pocket PCs and laptops; however a paper record does not rely on this and should always be maintained.

Safe use of an AED

AED in wet environment

In the damp there is likely to be a spread of the electric current away from the casualty's body. This is particularly the case in seawater. However experimental studies have been performed which indicate that:



Go back

- **30v maximum voltage at 15 cm (6 inches) from the patient**
- **May result in minor sensation (e.g., tingling)**
- **Not considered hazardous to operator**
- **Diving suits may offer protection**

AED should be maximum distance from casualty

The operator should place themselves and the AED as far from the casualty as the leads attached to the pads will allow.

No one touching patient when shock delivered

This is important at all times, but especially so in the damp environments of a boat or water's edge.

Turn off oxygen when shocking

Some casualties may be being given oxygen. There is a risk that the electric shock may result in a spark and this has a risk of enhanced combustion of clothing, hair etc.

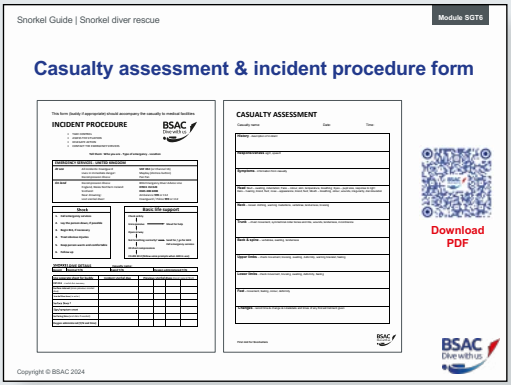
Do not use radio to transmit whilst analysing rhythm

Boat radios may interfere with the AED while it is analysing the heart rhythm.

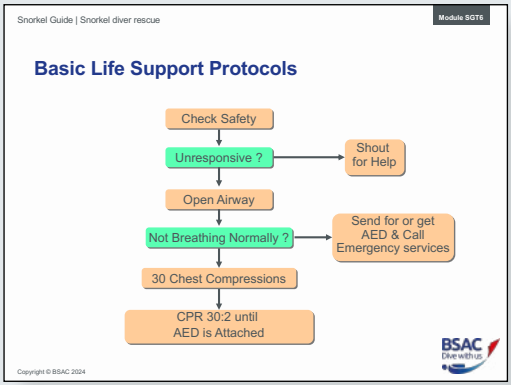
Snorkelling Casualty Assessment

BSAC has a snorkelling casualty assessment form – but the important thing is to make sure everything is written down so that the emergency services have as much information to go on. This is a task

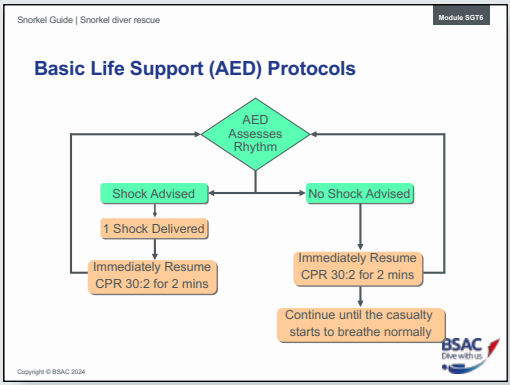
you can give to someone in the team who may be feeling anxious – by giving them something to do they will feel involved and important.



Basic Life Support protocols



Basic Life Support (AED) protocols



Go back

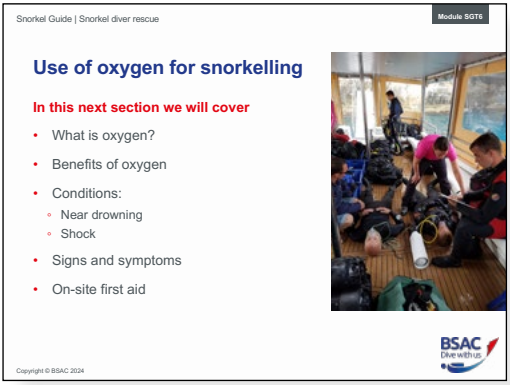
Avoiding litigation

As AEDs become more popular, the litigation issues will become less important. The realisation that the use of an AED is to preserve life rather than no use may end it seems to be increasingly more obvious!

- **Obtain recognised training**
- **Practise skills and remain up to date with current guidelines**
- **AED must be of a recommended standard**
- **AED must be maintained in accordance with manufacturers' recommendations**

Use of oxygen for snorkelling

Whilst oxygen is the recommended treatment for a diving accident where the casualty may have a decompression illness, it has been proven that oxygen is beneficial to anyone suffering from shock. Anyone with a depressed circulatory rate will give up 80% of the oxygen



content, leaving only 20% in the venous blood supply as opposed to nearer 60% in a normal situation. This will halve the partial pressure of oxygen in the capilleries transporting blood round the body.

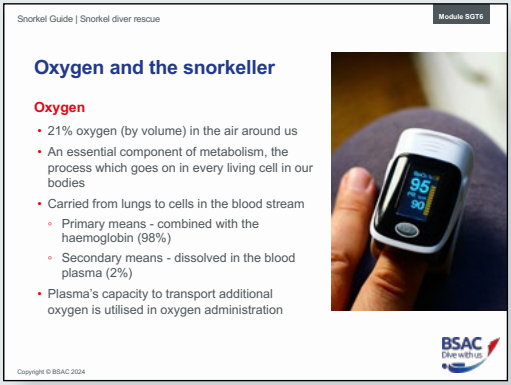
In this next section we will cover:

- **What is oxygen?**
- **Benefits of oxygen**
- **Conditions:**
  - **Near drowning**
  - **Shock**
- **Signs and symptoms**
- **On-site first aid**

Note: The minimum requirement for this course will highlight oxygen administration to snorkelling scenarios. Should students wish to pay for the full Oxygen Administration course then the entire course must be delivered, noting that it will concentrate on illnesses related to scuba diving. (Instructors can pick out snorkelling relevant bits to deliver if students don't want to do the whole course).

Oxygen and the snorkeller

Simply explain that with a higher percentage of oxygen breathed more will dissolve in water, the main component of plasma. The additional information below is to give you a more in-depth understanding.



Go back

Oxygen

- **21% oxygen (by volume) in the air around us**
  The air around us comprises 21% oxygen (by volume). The remainder being predominantly nitrogen (79%).
- **An essential component of metabolism, the process which goes on in every living cell in our bodies**
  Oxygen enables the production of energy, which keeps cells functioning. Without it they die. Waste products like carbon dioxide need to be removed to the lungs and from the body.
- **Carried from lungs to cells in the blood stream**
  - **Primary means - combined with the haemoglobin (98%)**
  - **Secondary means - dissolved in the blood plasma (2%)**
    Oxygen is carried from lungs to cells in the blood stream. Primarily chemically combined with the haemoglobin (98%) in the red blood cells (erythrocytes). At atmospheric pressure and breathing air, a small amount is dissolved in the blood plasma (2%).
- **Plasma's capacity to transport additional oxygen is utilised in oxygen administration**
  This capacity to transport additional oxygen dissolved in the water of plasma and erythrocytes is utilised in oxygen administration.

First aid oxygen equipment

Simply run through the list on the slide to make students aware of the subjects to be covered. Each will be covered during the module.

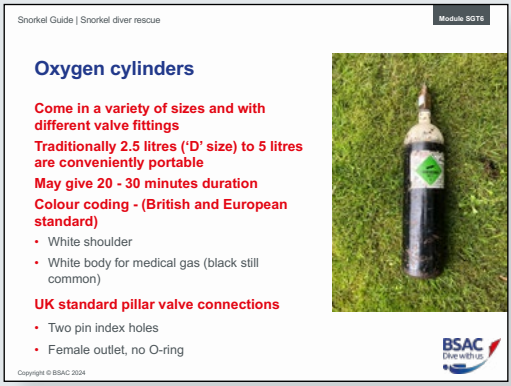
Configuration of oxygen administration equipment most suitable for diver use

Oxygen administration equipment comprises:

- Oxygen cylinder
- Oxygen regulator
- Oronasal resuscitation/ pocket mask
- Demand valve and mask
- Non-rebreathe/ Hudson mask
- Bag valve and mask (BVM)
- Manual or automatic resuscitator
- Storage case

Oxygen cylinders

Remember, some of the students may not be divers and not familiar with gas cylinders.



Come in a variety of sizes and with different valve fittings

Oxygen cylinder standards and colour coding vary around the world. Instructors should modify this presentation to reflect this and ensure students are receiving information relevant to their circumstances.

Go back

A variety of sizes and valve configurations are available in the UK, Europe and worldwide.

IT IS NOT NECESSARY to go into detail about regulations, capacities and colour coding. The student must know how to identify an oxygen cylinder and for how long it is likely to supply oxygen to one or two casualties. Some of the information below is provided to enable instructors to have a deeper knowledge of the subject and to answer questions from students.

Oxygen cylinders are, in many respects, similar to those used in SCUBA units. They may be made of steel, aluminium or composites but are not intended for use in water. Testing requirements reflect this. Rental cylinders will generally be tested by the supplier. Tested every five years, at which time the cylinder must be emptied and refilled with fresh oxygen.

Traditionally 2.5 litres ('D' size) to 5 litres are conveniently portable

The most conveniently portable cylinders generally having a water capacity (WC) between 2 litres and 5 litres.

A letter coding system is commonly used. Students may hear reference to a 'D' size cylinder, this has a nominal WC of 2.5 litres and is very compact and portable.

A 'D' size cylinder may hold up to 370 litres (136 bar) or 540 litres (210 bar) of oxygen when fully charged.

May give 20 – 30 minutes duration

This size of cylinder may provide 20 – 30 minutes of oxygen, depending on size, pressure in the cylinder, number of casualties and flow/breathing rate. 10 – 15 mins, with two casualties being supplied oxygen.

Larger cylinders are available, but often a number of small cylinders are easier to stow than one large one, particularly on a small boat.

Colour coding – (British and European standard)

All gas cylinders must be coloured in compliance with a national or regional standard to identify their contents. In the UK and Europe this is (European Standard BS EN 1089-3:2011)

- **White shoulder**
- **White body for medical gas (black still common)**

For medical gas cylinders, the body is to be coloured white (RAL 9010). Refer to BCGA TIS 20 (10), medical gas cylinders. BCGA policy statement on colour coding, for the BCGA policy on the colour coding of medical gas cylinders.

However, the body may be any colour except those used to identify specific classifications of gases (yellow, red, light blue or bright green). For historical reasons (compliance with previous standards), many are likely to have black cylinder bodies in the UK.

In the USA and many other countries with links to the USA, oxygen cylinders will be coloured green and meet different standards of construction.

UK standard pillar valve connections

In order to avoid equipment being connected to cylinders containing the wrong gas, pillar valve connections are unique to each gas. These connections are again defined in a European Standard.

- **Two pin index holes**
  For oxygen this comprises holes for a particular two pin index configuration.

- **Female outlet, no O-ring**

Unlike a SCUBA cylinder, there is a female gas outlet which has no O-ring. Some pillar valves are fitted with a knurled operating knob. Others have only a profiled spindle, to which is fitted a separate hand wheel or lever which is kept separately (usually attached to the regulator).

DIN 477 connection is also common in Europe.

Built-in regulators

Some models have regulators built into the cylinder valve. e.g., BOC rental units and SOS unit shown in slide.

Instructor notes: DO NOT go into detail, simply make students aware, particularly if they are using cylinders of this type in their club or centre.

BOC 'CD' and 'ZX' Medical Oxygen Equipment – rental cylinders.

CD

CD-sized oxygen cylinder is 2 litre by volume, constructed from aluminium which is then Kevlar hoop wrapped. Capacity of 460 litres of O2 at max pressure (CP/WP) of 230bar.

ZX

ZX-sized oxygen cylinder is 10 litres by volume, constructed from steel which is then carbon fibre hoop wrapped. Capacity of 3040ltrs of O2 at max pressure (CP / WP) of 300bar.

Integral cylinder valve and regulator

BOC CD and ZX Medical Oxygen Equipment both come with an integral cylinder valve delivery system with two outlets:

- **Constant flow outlet (adjustable 1-15 litres/minute) - standard 6mm fir tree attachment**
- **Demand valve outlet - BS5682 Schrader connector. Flow rate for the DV mask is up to 160 litres/minute**

Regulators

Regulators perform the same function as a SCUBA unit first stage; they reduce the cylinder pressure to a level compatible with the ultimate means of delivery to the casualty.
There are, however, again a number of detail differences. Remember, some of the students may not be divers.

Outlet pressure

Unlike SCUBA regulators, which maintain a constant differential above ambient pressure, oxygen regulators are only designed to be used at the surface, and hence deliver a fixed output pressure.

- **Fixed 4 -10 bar**

This will generally be around 4 bar (some manufacturers may be up to 10 bar). If an oxygen regulator was taken underwater, the flow of

oxygen would gradually reduce until it ceased completely when the ambient pressure equalled its delivery pressure (30m in the case of a regulator delivering 4 bar).

Inlet

To match the cylinder pillar valve, this will be of an oxygen standard (UK = two pin register configuration and male inlet with 'Bodok' seal washer).

- **Two index pins, male inlet with sealing washer**
- **DIN 477 threaded**

Simple pressure gauge

Mounted on the body of the regulator, this indicates cylinder contents against an often fairly coarse scale.

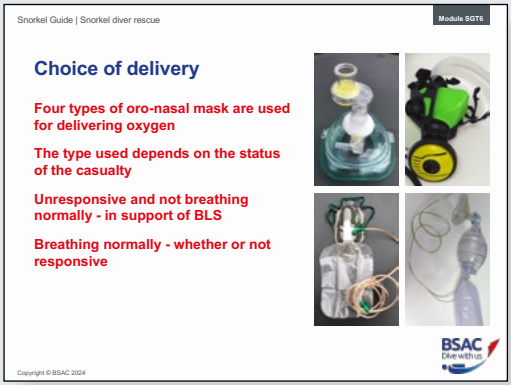
Outlets capable of supporting:

Usually there are a minimum of two outlets, including the following:

- **Demand valve (100 to 160 litres/minute flow rate)**
  At least one outlet capable of supplying a demand valve. This will typically provide a flow rate of 100 - 160 litres minute. The delivery hose may be either permanently attached or fitted with a quick disconnect. Some equipment may have more than one of the latter connections to allow a second demand valve to be connected.
- **Constant flow 15 litres/minute (ideal) 10 litres/minute (minimum)**
  A constant flow outlet delivering a minimum of 10 litres/min., ideally 15 litres/minute. Some will be adjustable through a range up to 25 l/min. This is for use with a oronasal resuscitation /'pocket' style, non-rebreather (Hudson), bag valve mask (BVM) or other simple mask.

Choice of delivery

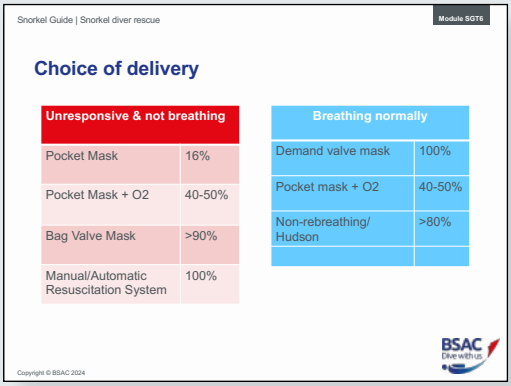
Four types of oro-nasal mask are most commonly used for delivering oxygen



Masks which fit over both nose and mouth are better tolerated than mouthpieces found in most diving equipment. Mouthpieces often induce nausea.

There are THREE principal methods of delivery which will be used on ALL courses.

TWO additional methods, BVM and M/AR may be included where the instructor is qualified and experienced in the use of such equipment and that equipment is available to the students in their branch or centre.



The type used depends on the status of the casualty

Unresponsive and not breathing normally – in support of BLS

We have to inflate the casualty's lungs with oxygen.

Go back

Breathing normally – whether or not responsive

The casualty will breathe the oxygen from the device.

A summary of each of the methods of delivery we are going to learn about.

Presented in two tables, one when used in support of BLS where the casualty is unresponsive and not breathing normally, the second where they are breathing normally.

There is no need to dwell on this; what they must know is that some methods deliver higher percentages of oxygen than others and why.

Demand valves

Remember, some students may be non-divers and not have experience of breathing off a demand valve.

Provide oxygen on demand

Just like on a SCUBA unit, demand valves supply oxygen only when the casualty breathes in (i.e. demands oxygen). The flow stops when the casualty stops inhaling. When they exhale, their expired gas escapes through a non-return valve into the surrounding environment.

- **Similar to the operation of a diver's demand valve**
- **As the casualty breathes in, oxygen is supplied to them**
- **When they stop inhaling, the flow stops**

Can be capable of flow rates of up to 160 litres / min.

To meet the peak flow rates which could be needed to satisfy the casualty's breathing, demand valves will deliver 100-160 litres/min. This is well in excess of measured rates of around 75 litres/minute in distressed adults.

Fitted with oro-nasal mask

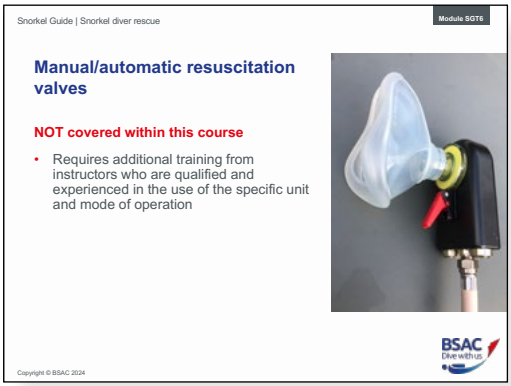
Unlike most SCUBA units, these are fitted with oronasal masks, not a mouthpiece. A casualty suffering from nausea, a symptom of some types of decompression illness or the result of motion sickness, is less likely to tolerate a mouthpiece. Where a mouthpiece is used, it is often necessary to use a noseclip (to prevent them from breathing in through the nose and diluting the oxygen), and this may also be uncomfortable for the casualty.

An oronasal mask will be more tolerable and also enables as near to 100% oxygen as possible to be inhaled.

They are often made from a transparent material to enable monitoring of the casualty's airway/breathing.

- **Inflated or flange face seal**
- **Available in a range of sizes**

Manual/automatic resuscitation valves



NOT covered within this course

ONLY instructors who are qualified and experienced in the use of the specific unit and mode of operation will teach its use.

It may be taught by instructors who have the qualifications and experience and have received specific training for the particular unit and configuration.

This type of unit is rarely going to be used in the club or centre environment. It is used by some rescue services.

Information for instructors

In addition to a demand capability for breathing casualties, some demand valves provide a positive pressure resuscitation capability for non-breathing casualties. This resuscitation capability (know as positive pressure ventilation) can be effected in a number of ways, not all of which are suitable for recreational diver use.

Examples include the SABRE MARS and DAN MTV-100. The use of these units requires additional training delivered by qualified instructors.

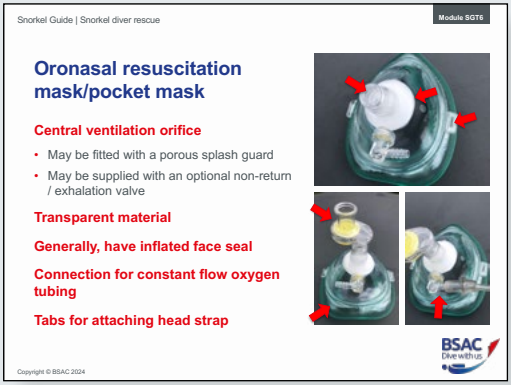
Systems offering automatically controlled positive pressure ventilation are available, which would be suitable for recreational diver use, but these are generally very expensive, may not be suitable for use in the diving environment and require unit specific training.

Simpler types relying on the operator to manually control the flow of oxygen by use of a trigger or button are also available.

The most cost-effective valve suitable for recreational diving use is manually controlled. It will deliver 100-160 litres/minute on demand. This is limited to a maximum flow rate of 40 litres/minute, with pressure relief valve set to a pressure of approx. 45cm water, to avoid inflating the stomach or over-pressurising the casualty's lungs. As in rescue breathing and use of BVM, ventilating a non-breathing casualty too forcefully risks inflating the casualty's stomach. This has the potential to cause the stomach contents to flow back up the oesophagus and into the upper airway.

Oronasal resuscitation mask/ pocket mask

Central ventilation orifice



These may have already been introduced in the Sports Diver or pre-requisite practical BLS module SP1. Here we are going to introduce the use of oxygen with an oronasal resuscitation mask.

Commonly known as a pocket mask, this is Laerdal's name for the oronasal resuscitation mask.

- **May be fitted with a porous splash guard**
- **May be supplied with an optional non-return / exhalation valve**

Go back

A non-return/exhalation valve and/or porous filter to protect the rescuer from the casualty's body fluids may be included or attached. These do NOT protect against airborne infections such as Covid.

Transparent material

They have a central ventilation orifice for both inflating the casualty's lungs and for the casualty's exhalations. Made from a transparent material for airway monitoring. Fogging of the inner surface may confirm casualty is breathing.

Generally have inflated face seal

They generally have an inflated face seal, though some may have a simple flange seal.

Connection for constant flow oxygen tubing

For oxygen-enriched RB, they must also be fitted with a connection (which may include a non-return valve) for the constant flow oxygen tubing. Be aware: Oronasal resuscitation/'pocket' masks without such connections are also available. Check what you have in your kit.

The majority of masks used in resuscitation and first aid are intended for SINGLE USE and should be disposed of after contact with a casualty.

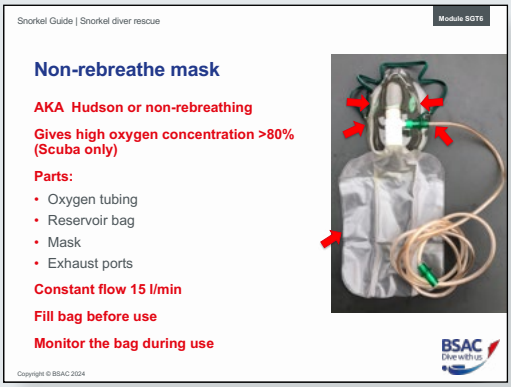
The instructor should briefly demonstrate, on a manikin, the use of the oronasal pocket mask to provide RB to a casualty.

If they have not already used one, allow each student to have a go using the pocket mask issued to them individually. Infection control measures must be applied.

Tabs for attaching head strap

Non-rebreathe mask

The instructor should demonstrate on a breathing person. Have the students breathe off the non-rebreathe mask. Ensure infection control measures. One mask issued per student.



The non-rebreathe mask is often found to be more comfortable than the demand valve for a patient who is only breathing weakly. Otherwise, with a casualty who is responsive and breathing normally, the use of the demand valve and mask is preferable.

AKA Hudson (manufacturer name) or non-rebreathing mask

The non-rebreathe mask is also known as a Hudson or non-rebreathing mask. Students should be aware there are various names given to this piece of equipment, and these will be used interchangeably by various suppliers, should they wish to purchase replacements.

Gives high oxygen concentration >80% (Scuba only)

It is very useful when used alongside a demand valve and mask for a buddy pair needing 100% oxygen. For example, when one member of a buddy pair has signs and/or symptoms of DCI and is on the demand valve and mask, the second may be supplied from a non-rebreathe mask, whether symptomatic or as a precaution. Remember, with two divers breathing from a small portable cylinder, the supply will only last half as long.

Go back

The standard pocket mask with an oxygen tube attached gives an increased concentration of oxygen in the inspired gas to a breathing casualty, but concentrations are unlikely to be above 40% oxygen. To a casualty with DCI, higher concentrations may have significant advantages. The non-rebreathe mask gives oxygen concentration higher than the oronasal resuscitation/pocket mask, maybe as much as 80-90%.

The manufacturers and other sources indicate that under optimal conditions, the reservoir mask can deliver between 85% and 100% oxygen to a non-breathe casualty, although in the case of a rapidly breathing diving casualty, the concentration is very likely to be lower. Although this may not be as high as a demand valve and mask, it is still a high percentage.

Parts

- **Oxygen tubing**
  To attach to the 6mm firtree outlet on the oxygen regulator.
- **Reservoir bag**
  Fills the reservoir, which ideally should deflate no more than 2/3rds when the casualty inhales.
- **Mask**
  Fits to the casualty's face like the other masks used in the course.
- **Exhaust ports**

Expired air is able to escape from the mask through the exhaust ports and a non-return valve restricts the entry of ambient air. Current good practice is for the removal of one exhaust valve from one of the side ports, where a valve is fitted to each side. Recently manufactured masks will only have a valve fitted to one side.

Constant flow 15 l/min

In practice, the flow rate should be at least 15L/min and may need to be higher. However, some equipment (e.g. Marinox and AP Diving) has a fixed flow of just 10 litres/minute or less.

The oxygen concentration in the inspired gas is dependent on the flow rate of oxygen supplied by the regulator and the breathing rate of the casualty. The regulator should be able to supply oxygen at a rate matching the breathing rate of the casualty to be confident that the concentration of oxygen inspired is close to 100%.

Fill bag before use

By putting thumb over non-return on top of bag.

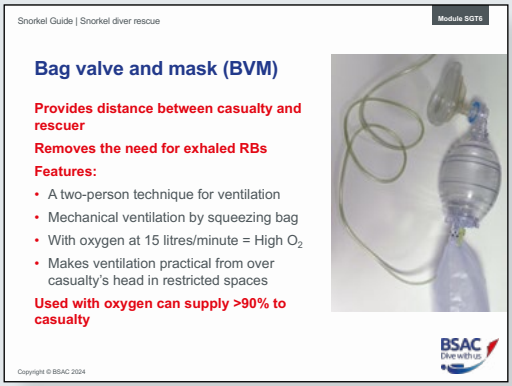
The oxygen tubing should be attached to the mask and the gas exit from the reservoir (inside the nose piece) closed with a finger until the reservoir is filled. Once the reservoir is full, the mask can be offered to and put on the casualty.

Monitor the bag during use

Ideally, the bag should remain 2/3rds full when the casualty has taken a breath. If not, and you have the option, increase the gas flow.

Bag valve and mask (BVM)

IMPORTANT – this is an OPTIONAL SKILLS INPUT for appropriately qualified and experienced instructors, where the club or centre has this equipment available. It must not be taught by other instructors.



Go back

Introduce the use of the BVM as another aid to rescue breathing. It can be used to provide ventilation of a non-breathing casualty during BLS rather than using exhaled breath. Either an initial five (in drowning casualties) or the subsequent sets of two, following 30 compressions, in all other circumstances. Without oxygen it will ventilate the casualty with 21% oxygen.

Provides distance between casualty and rescuer

Useful in reducing the likelihood of infection.

Removes the need for exhaled RBs

Less exhausting for the rescuer.

Features:

- **A two-person technique for ventilation**
  The BVM is designed to be used by two operators, one holding the oro-nasal mask in place and the other gently squeezing the bag. It can be used by a single, experienced operator but is not as easy to perform. The greatest concern with single operator use is failing to make an effective seal with the mask and not adequately ventilating the casualty's lungs. If there is any doubt, for example, the chest is not seen to rise, then a single operator must involve a second operator.

  Instructor demonstrates the use of the BVM to ventilate a manikin, two person followed by solo.

  - **Rescuer positioned in a kneeling stance alongside or above the casualty's head, with the head between the rescuer's knees/thighs**
  - **Appropriate neck extension achieved**
  - **Correct placing of mask onto face**
  - **Grip of thumb and first finger around the periphery of the**

mask, other fingers hooked under the jaw bone, clear of the windpipe.

Don't be too pedantic about the placing of the fingers, as people with different-sized hands may need to grip the mask differently. An effective seal is the main criterion.

Students will briefly practice the use of the BVM. Initially students should work in pairs to practice the use of the BVM to achieve effective ventilations and to master the mask position/grip. Once the two-person technique is achieved, introduce the one-person technique.

- **Mechanical ventilation by squeezing bag**
  Apply a gentle squeeze technique to the bag. The bag does not have to be fully compressed, just sufficient to provide ventilation (500 ml in an adult).
- **With oxygen at 15 litres/minute = High O2, >90%**
  Oxygen flow of 15 litres/minute should maintain reservoir bag at least 2/3rd full throughout procedure.
- **Makes ventilation practical from over casualty's head in restricted spaces**

Used with oxygen can supply >90% to casualty

Check:

- **Effective seal of the mask to the face**
- **Fingers clear of the windpipe**
- **Adequate neck extension - ensure that neck extension does not progressively increase during the period of ventilations as the 'ventilator' subconsciously tries to 'pull' the casualty's face into the BVM**

Adequate rise of the chest during ventilation, particularly with single operator.

At the end of this exercise, the students should be able to position and use the BVM to ventilate the manikin. More practice in OAP1 scenarios module.

The majority of masks used in resuscitation and first aid are intended for SINGLE USE and should be disposed of after contact with a casualty. In training, it is important that the exterior surfaces are cleaned off between students to reduce the chance of transmitting infection.

Storage cases

Oxygen equipment needs to be kept as close to the scene of diving operations as possible and will be subject to a demanding environment, particularly in a small boat. Suitable storage is therefore essential to protect it from both the elements and damage.

Storage cases should be:

- **Robust**
  To protect the equipment from knocks, particularly when carried on a small boat.
- **Waterproof**
  To prevent it being exposed to water and contaminants. Salt water is particularly corrosive and will rapidly degrade oxygen equipment.

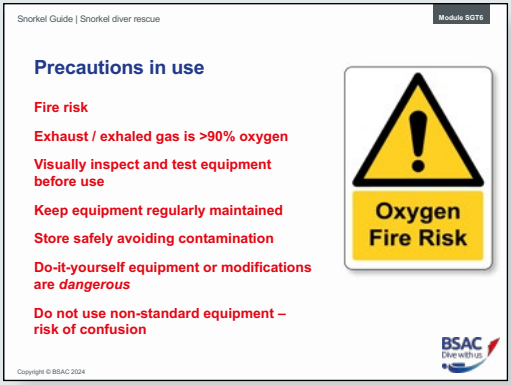
- **Ideally store equipment in fully assembled state**
  This allows the whole system to be set up prior to snorkellers entering the water and be ready for immediate deployment.
- **Case must have a pressure release valve if used to store cylinder**

The case must have a pressure relief valve to release any leaking gas if it is used to store a cylinder. A leaking cylinder in a sealed case may cause the case to explode and cause injury.

The bags and cases often supplied for the storage of first aid oxygen units in normal use on land can be totally inadequate. They will offer very little protection from the elements or impact, even when used for shore diving. As a result, the equipment can quickly become unfit for use or inoperable. Subsequent repairs may be very costly. Investment in a suitable container is always worthwhile.

Precautions in use

The handling of oxygen equipment requires more attention than for breathing air systems:



Fire risk

Because of the risks of spontaneous combustion in the presence of certain greases/ hydrocarbons, and the fire hazard when oxygen equipment becomes exposed to dirt and contamination, absolute cleanliness is a necessity when handling and storing oxygen equipment.

Go back

Pressurise Oxygen very slowly.

Storage. Avoid contamination of all Oxygen clean equipment

Exhaust / exhaled gas is >90% oxygen

The gas exhausted from all these masks will contain a high percentage of oxygen (>90%), so we must take particular care when we are not in the open air. In the open air, and particularly where there is a breeze, the exhaust gas will disperse rapidly. There is a significant risk in confined spaces such as unventilated cabins and compartments in boats and even classrooms, particularly where there are naked flames or electrical elements (fires, heaters, cookers and smoking).

Visually inspect and test equipment before use

Because it is rarely used, regular checking and maintenance is essential to ensure that the equipment will work properly when needed. It is recommended that oxygen first aid equipment is visually inspected and tested before each occasion when it is used. Ensure you follow the manufacturer's recommendations.

Keep equipment regularly maintained

Regular maintenance by an appropriately qualified person, at a period recommended by the manufacturer is essential.

Do-it-yourself equipment or modifications are dangerous

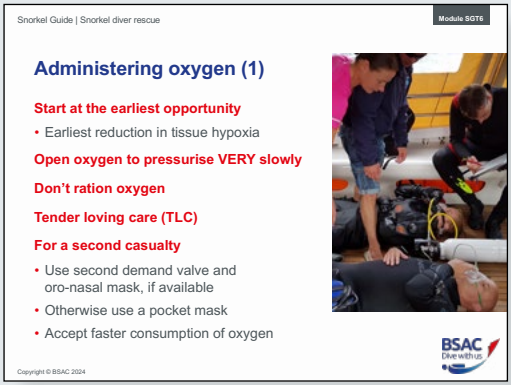
The design and maintenance of oxygen equipment is a specialist discipline which is far more complex than for breathing air systems. Unless you have been specifically trained to service such equipment, do not attempt to maintain, build or modify oxygen equipment.

Do not use non-standard equipment – risk of confusion

Always use oxygen equipment which has been manufactured for that purpose. Ensure oxygen cylinders are clearly marked. The use of improvised equipment can lead to confusion where a casualty could be mistakenly treated with air, or worse still, a diver could dive using a cylinder filled with oxygen (Instructor only needs to mention this if relevant).

Administering oxygen (1)

Start at the earliest opportunity



- **The earlier that the administration of oxygen is commenced the greater its benefit.**
- **Earliest reduction in tissue hypoxia**
- **Any reduction in tissue oxygenation (hypoxia) due to impaired blood flow is countered as soon as possible.**

Don't ration oxygen

Because oxygen has greater benefits the earlier it is administered, where supplies are limited it is more beneficial to use up the oxygen early, rather than try to ration it.

Go back

Tender loving care (TLC)

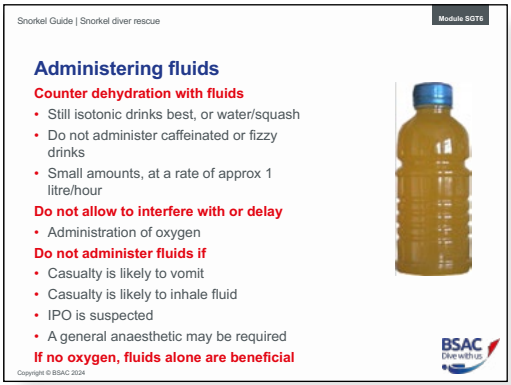
Although addressing a physical need, the casualty's mental condition should not be overlooked and copious amounts of tender loving care (TLC) administered along with the oxygen.

For a second casualty

- **Use second demand valve and oro-nasal mask, if available**
- **Otherwise use a pocket mask**
- **Or reservoir mask for the second casualty and accept the more rapid depletion of the oxygen supply.**

Administering fluids

With a nauseous casualty, care should be taken to ensure that drinking the fluid does not make them vomit as the resultant fluid loss would further aggravate their condition. Administration of fluids should not, however, be allowed to impede or delay the administration of oxygen.



Counter dehydration with fluids

- **Still isotonic drinks are best, or water/squash**
- **Do not administer caffeinated or fizzy drinks**
- **Small amounts, at a rate of approx 1 litre/hour**

Do not allow to interfere with or delay

- Administration of oxygen

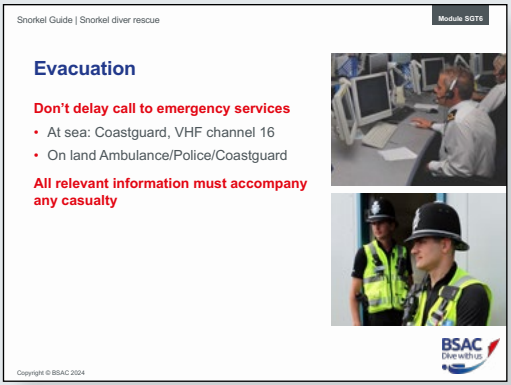
Do not administer fluids if

- Casualty is likely to vomit
- Casualty is likely to inhale fluid
- IPO is suspected
- A general anaesthetic may be required

If no oxygen, fluids alone are beneficial

Even where oxygen is not available, fluids should be administered as a first aid measure.

Evacuation



Don't delay call to emergency services

- At sea: Coastguard, VHF channel 16
- On land Ambulance/ Police/Coastguard

All relevant information must accompany any casualty

Go back

Safety considerations

Remember that oxygen SUPPORTS combustion.

Beware of enclosed spaces!!

Avoid sources of combustion!!

Recovery position

If the casualty starts breathing, turn them over carefully supporting the head and place them in the recovery position. If you are on a boat, do the best you can.

If casualty breathing place in recovery position

Casualty care

Tender loving care (TLC)

Casualties and anyone involved in the rescue may be in a state of shock so make sure you comfort and reassure and provide assistance to all who need it.

- **Reassure at all times**
- **Protect from elements**
- **Casualty records**
- **Friends or family contact**

Post incident support & considerations

Try to get them to a sheltered area and keep them warm. The Snorkel Dive Manager should start making a casualty record so that if further medical assistance is required, time will be saved to aid the paramedics.

- **Support required**
- **BSAC Incident Report**
- **Successful rescues**

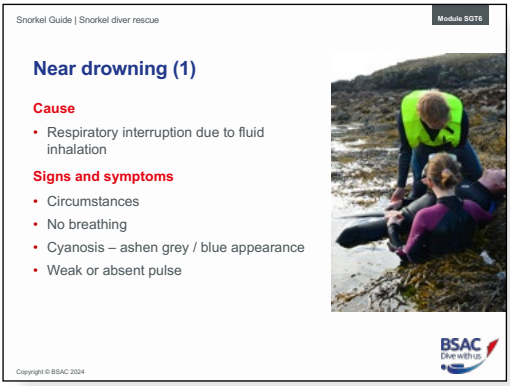
Feedback important

Once the casualty's care is handed over to the emergency services or resolved, then take the time to complete an incident report and return it to BSAC HQ.

- **Part of maintaining safety record of our sport**

Go back

Near drowning (1)



Technically, a drowned person has been certified dead by a doctor, as a result of fluid inhalation. A near drowning casualty has suffered respiratory interruption due to fluid inhalation and is in dire need of first aid if death is to be avoided. Physical obstruction of the air supply to the lungs causes oxygen starvation and hence the respiratory nerve centre of the brain ceases to function. This results in the paralysis of the muscles involved in respiration and thus respiration ceases. Do not waste time explaining the differences between ‘dry’ and ‘wet’ drowning; it is medically contentious and in any event, immaterial to the treatment.In the case of near drowning, the circumstances are a significant factor in the diagnosis. Referring back to the lesson on BLS, extract from the students other signs and symptoms of respiratory arrest.

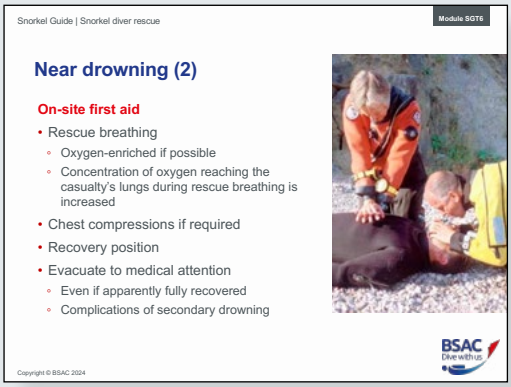
Cause

- **Respiratory interruption due to fluid inhalation**

Signs and symptoms

- **Circumstances**
- **No breathing**
- **Cyanosis – ashen grey / blue appearance**
- **Weak or absent pulse**

Near Drowning (2)



The prime on-site first aid measure for near drowning is BLS. If breathing is re-established, the casualty should be placed in the recovery position while awaiting medical aid. Oxygen-enriched rescue breathing provides an increased partial pressure of oxygen in the gas ventilating the casualty's lungs and hence an increased supply of oxygen to the casualty's tissues and organs. Even if the casualty apparently fully recovers, it is essential that they receive medical attention. This is because the entry of water into the casualty's lungs irritates the lung lining, and can result in the discharge of fluid into the lungs (oedema). The effects of this, which can be quite dramatic and are known as secondary drowning, do not become apparent for some time after the event. Medical attention is essential to check for and treat this condition.

On-site first aid

- **Rescue breathing**
  - » **Oxygen-enriched if possible**
  - » **Concentration of oxygen reaching the casualty's lungs during rescue breathing is increased**
- **Chest compressions if required**
- **Recovery position**
- **Evacuate to medical attention**
  - » **Even if apparently fully recovered**
  - » **Complications of secondary drowning**

Go back

Shock

On-site first aid

- Treat prime cause
- Reassure casualty (TLC)
- Keep casualty quiet
- Lay casualty down with legs raised
- Keep warm and comfortable
- Administer oxygen
  - » Increased oxygen dissolved in the blood offsets effects of inadequate circulation
- Monitor condition
- Nothing by mouth
- Evacuate to medical attention

Snorkel related injuries - mask squeeze

This part of the lesson covers minor barotrauma: mask, ear and sinus problems, and tooth cavities. The students should be able to recognise the conditions and know what first aid actions

to take. Mask squeeze is unlikely but not impossible, depending on how deep the student can dive and whether they fail to equalise their mask on descent.

Inadequate equalisation on descent

- Bruised / swollen facial tissues
- Bruised / haemorrhaged eyes
- Self healing

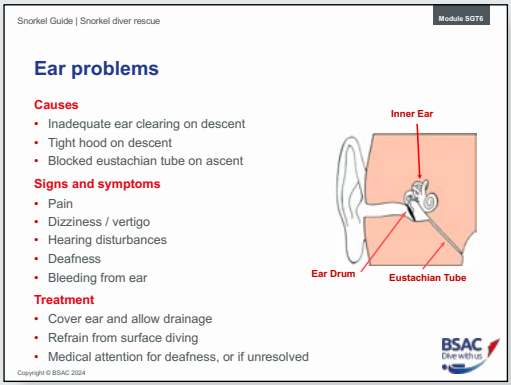
Treatment

- Reassurance
- Medical attention if painful
- Refrain from surface diving until clear

Ear problems

Causes

- Inadequate ear clearing on descent
- Tight hood on descent
- Blocked eustachian tube on ascent
- Signs and symptoms
- Pain
- Dizziness / vertigo
- Hearing disturbances



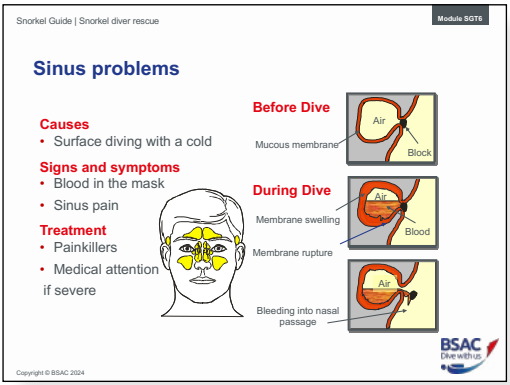
Go back

- Deafness
- Bleeding from ear

Treatment

- Cover ear and allow drainage
- Refrain from surface diving
- Medical attention for deafness, or if unresolved

Sinus problems



Causes

- Surface diving with a cold

Signs and symptoms

- Blood in the mask
- Sinus pain

Treatment

- Painkillers
- Medical attention if severe

Stings from sea creatures

In the UK, there are very few types of venomous creatures. The main hazards are some types of jellyfish (Lion's mane jellyfish cyanea capillata, pictured top, andcyanea lamarckii, pictured bottom). Their stings can be painful but are not lethal. Overseas, especially

in tropical waters, there are more types of venomous creatures, and some of them can inflict serious or even lethal stings. Hazards include fish (e.g., lionfish, stonefish, scorpion fish), medusa (e.g., box jellyfish), molluscs (e.g., cone shells, blue-ringed octopus), and sea snakes. There may be specific treatments for the local venomous creatures, so do some research if you are to be the first aider on an overseas snorkel diving expedition, unless there will be a competent local first aider on hand. The advice in this section is aimed at the UK situation, although the general approach is applicable anywhere.

Hazards

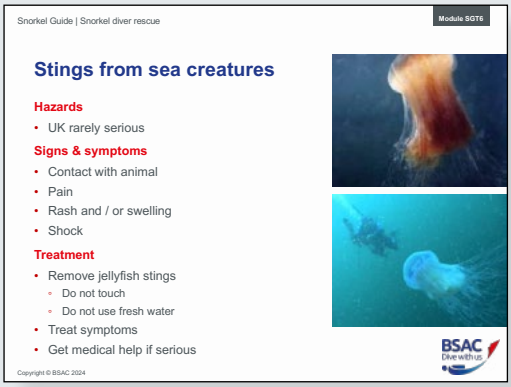
- UK rarely serious

Signs & symptoms

- Contact with animal
- Pain
- Rash and / or swelling
- Shock

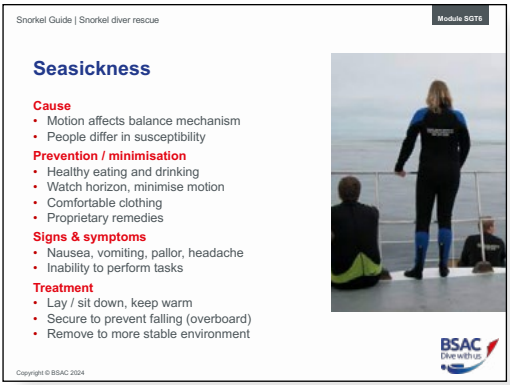
Treatment

- Remove jellyfish stings
- Do not touch
- Do not use fresh water
- Treat symptoms
- Get medical help if serious



Go back

Seasickness



Cause

- Motion affects balance mechanism
- People differ in susceptibility

Prevention / minimisation

- Healthy eating and drinking
- Watch horizon, minimise motion
- Comfortable clothing
- Proprietary remedies

Signs & symptoms

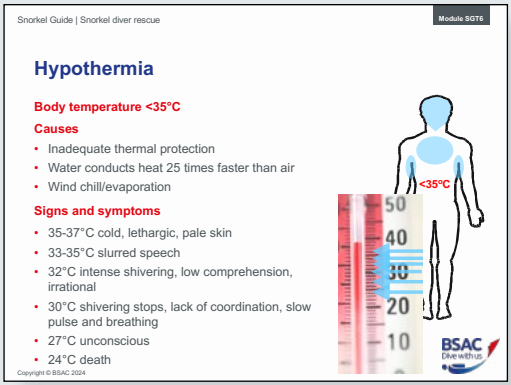
- Nausea, vomiting, pallor, headache
- Inability to perform tasks

Treatment

- Lay / sit down, keep warm
- Secure to prevent falling (overboard)
- Remove to more stable environment

Hypothermia

Remember that as instructors, we will probably be warm and toasty in our drysuits, but our students may be in borrowed ill-fitting wetsuits where the water flushes through and takes the body's core heat away.



Body temperature <35°C

Causes

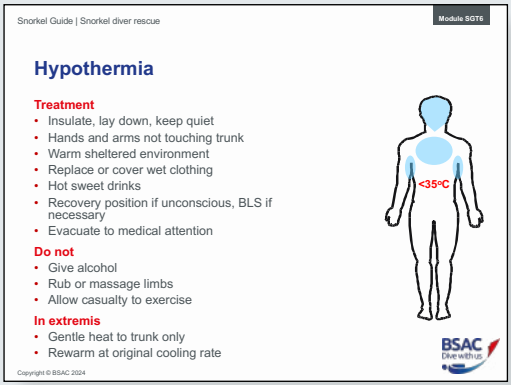
- Inadequate thermal protection
- Water conducts heat 25 times faster than air
- Wind chill/evaporation

Signs and symptoms

- 35-37°C cold, lethargic, pale skin
- 33-35°C slurred speech
- 32°C intense shivering, low comprehension, irrational
- 30°C shivering stops, lack of coordination, slow pulse and breathing
- 27°C unconscious
- 24°C death

Treatment

- Insulate, lay down, keep quiet
- Hands and arms not touching trunk



Go back

- Warm sheltered environment
- Replace or cover wet clothing
- Hot sweet drinks
- Recovery position if unconscious, BLS if necessary
- Evacuate to medical attention

Do not

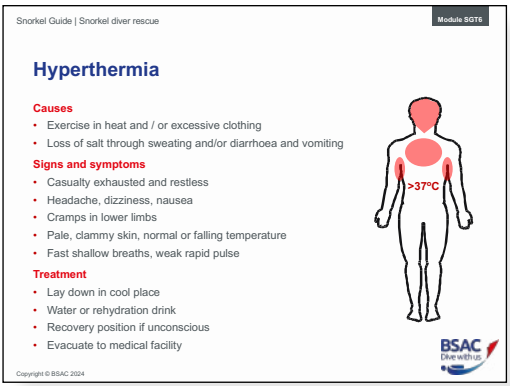
- Give alcohol
- Rub or massage limbs
- Allow casualty to exercise

In extremis

- Gentle heat to trunk only
- Rewarm at original cooling rate

Hyperthermia

Unlikely in the UK, however, when abroad in hot climates it is very easy to succumb to heat stroke – even if you stay out of the sun.



Causes

- Exercise in heat and/or excessive clothing
- Loss of salt through sweating and/or diarrhoea and vomiting

Signs and symptoms

- Casualty exhausted and restless
- Headache, dizziness, nausea
- Cramps in lower limbs
- Pale, clammy skin, normal or falling temperature
- Fast shallow breaths, weak rapid pulse

Treatment

- Lay down in cool place
- Water or rehydration drink
- Recovery position if unconscious
- Evacuate to medical facility

Exhaustion

A long snorkel could lead to exhaustion – it's important to let the students know what to look for.

Causes

- Overexertion
- Aggravated by heat, cold, depth, illness

Signs and symptoms

- Deep laboured breathing
- Headache and confusion
- Unable to respond to mental and physical demands

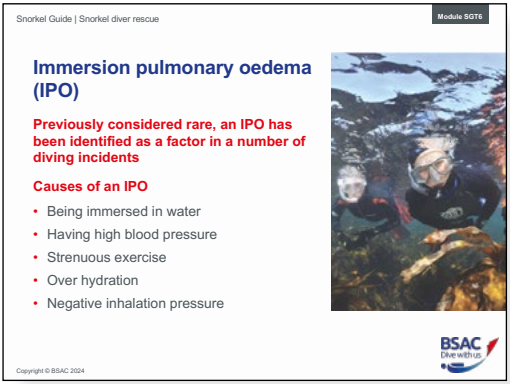
Go back

Treatment

- **Stop activity**
- **Lay down and keep quiet**

Immersion pulmonary oedema (IPO)

Previously considered rare, immersion pulmonary oedema (IPO) has been identified as a factor in several diving incidents. BSAC has been promoting increased diver awareness of this condition since 2017 and will continue to do so.



Causes of an IPO

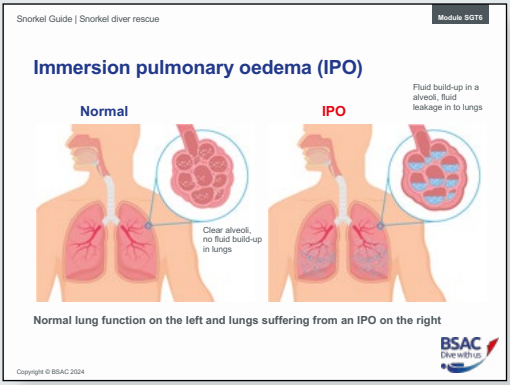
There are several potential causes of an IPO.

- **Being immersed in water**
  Immersion in water increases the internal pressure in the blood circulation.
- **Having high blood pressure**
- **Strenuous exercise**
  An IPO can affect even very fit people and has been identified in competitive swimmers and triathletes. Divers swimming hard against a current or conducting a strenuous rescue could be at additional risk.

- **Over hydration**
  Divers should normally be hydrated, but excessive hydration may increase the likelihood of an IPO.
- **Negative inhalation pressure**
  Increased work of breathing (WOB), such as with a poorly maintained regulator, can further contribute to the risk of an IPO.

  The internal pressure differential between the circulation and the lungs can cause fluid to leak into the lungs, causing a build-up of fluid in the alveoli and preventing normal gas exchange.

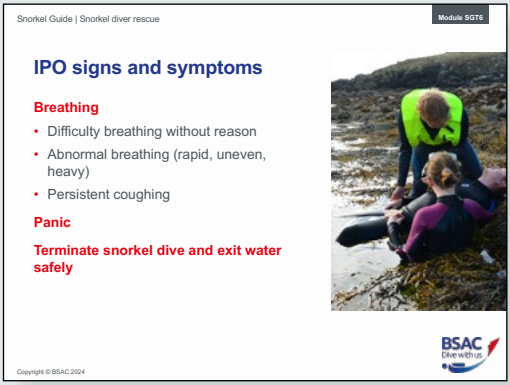
The two images illustrate normal alveoli and alveoli filling with fluid as a result of an IPO.



IPO signs and symptoms

The key message is how to identify the signs of a snorkel diver suffering from an IPO.

The snorkeller with an IPO will be aware they have breathing difficulties, but as they become more affected, they are less likely to realise that the issue lies with



Go back

them rather than some external issue such as their equipment. An attentive buddy who is aware of the signs and symptoms of an IPO is more likely to correctly identify the issue and respond appropriately.

Breathing

The casualty will have fluid in their lungs, which will make breathing difficult and cause significant distress.

- **Difficulty breathing without reason**
- **Abnormal breathing (rapid, uneven, heavy)**
- **Persistent coughing**

Panic

A snorkeller who is experiencing serious breathing difficulties is likely to be very distressed with the potential for panic.

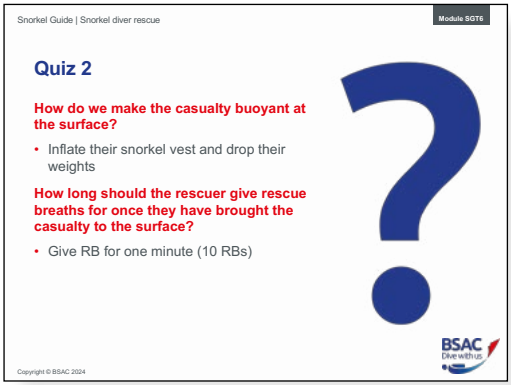
Terminate snorkel dive and exit water safely

Because the cause is due to immersion, the only solution is to remove the casualty from the water as quickly and safely as possible.

Quiz 2

How do we make the casualty buoyant at the surface?

- **Inflate their snorkel vest and drop their weights**



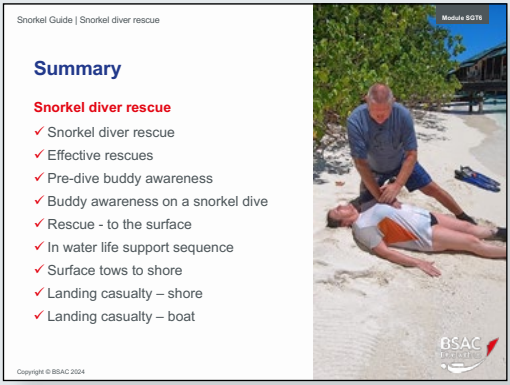
How long should the rescuer give rescue breaths for once they have

brought the casualty to the surface?

- Give RB for one minute (10 RBs)

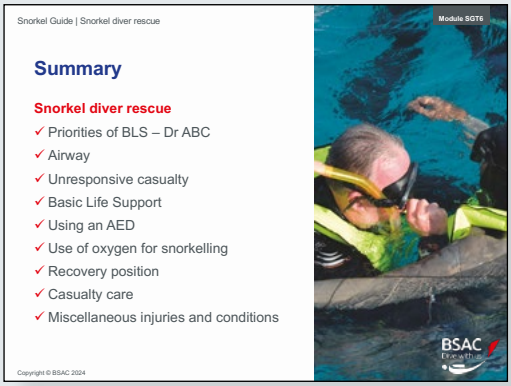
Summary

Run through the summary and explain that you will be covering all of this in the next session as a practical exercise.



Snorkel diver rescue

- ✓ Snorkel diver rescue
- ✓ Effective rescues
- ✓ Pre-dive buddy awareness
- ✓ Buddy awareness on a snorkel dive
- ✓ Rescue - to the surface
- ✓ In water life support sequence
- ✓ Surface tows to shore
- ✓ Landing casualty – shore
- ✓ Landing casualty – boat
- ✓ Priorities of BLS – Dr ABC
- ✓ Airway
- ✓ Unresponsive casualty
- ✓ Basic Life Support

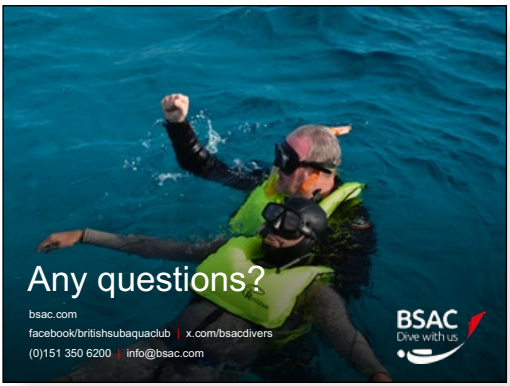


Go back

- ✓ **Using an AED**
- ✓ **Use of oxygen for snorkelling**
- ✓ **Recovery position – two kinds**
- ✓ **Casualty care**
- ✓ **Miscellaneous injuries and conditions**

Any questions?

Students can now do the end of module quiz in their student guide. Answers at the back.



Practical 1: Risk assessment

Practical 1: Risk assessment

How to conduct a dynamic risk assessment.

This is a 90-minute workshop designed to collate a dynamic risk assessment for being a snorkel guide and work through all the elements to make sure that the actual guiding lesson is safe and effective.

The instructor should prompt the students into creating a risk assessment that will have the following sub-headings (hazards).

- **Health of everyone in the snorkel party**
- **Entry and exit**
- **Emergency action plan**
- **Party size / buddy pairings**
- **Tides / wind and weather**
- **Other water users / surface traffic**
- **Marine life injuries**
- **Illness whilst in the water**
- **Hot and cold injury (hyper and hypothermia)**
- **Protective clothing**
- **Signals**
- **Brief and debrief**

We need to reduce the risks to as low a level as possible, so we will create our risk assessment using these hazards.

Hazard	Level of concern (L/M/H)	Mitigation	Level of concern (L/M/H)
1. Health of snorkel party	H	Check everyone is fit to carry out the task. They should be water confident and not be carrying any medical issues. Everyone in the party including the guide should fill out and sign a declaration of fitness to snorkel.	M-L
2. Entry and exit	M	**Beach:** Walk in and walk out – is it ok for the ability of the group? Is there a drift which will result in the exit not being the same as the entry? **Boat:** Steps, jump, ladder, lift – this must be briefed so that everyone knows how to get in and out.	L
3. Emergency action plan (EAP)	M	This must be briefed to everyone and should include details of the nearest hospital, emergency phone numbers or VHF channel, names of everyone in the snorkel party and the declaration of fitness to carry out the snorkel exercise by each individual.	L
4. Party size and buddy pairings	H-M	The Snorkel Guide must be capable of looking after the group size. They should buddy everyone up (weak with strong) and make sure everyone knows who is buddied with who.	M-L

Go back

Hazard	Level of concern (L/M/H)	Mitigation	Level of concern (L/M/H)
5. Tides / wind / weather	H	The Snorkel Guide must understand that to go snorkelling in bad weather greatly improves the chances of accidents happening. They must ensure the weather conditions and tide are suitable for the level of competence of the snorkel group.	M
6. Other water users / surface traffic	H	Other water users are inevitable where there is a good site for snorkelling. The group must be visible to the surface/boat cover at all times. They should carry a highly visible Surface Marker Buoy at all times and any bright colours as rash vests / wetsuits or snorkel vests should be worn where possible. Permission from the water authority to make the snorkel dive should be granted and the surface cover happy for the dive to go ahead.	M
7. Marine life injuries	H-M	BSAC has a policy of look but don't touch. Snorkellers should be briefed on this aspect. If they are stung by anything they should immediately alert the Snorkel Guide (SG) who may implement the EAP if necessary.	M-L
8. Illness whilst in the water	M	This should be mitigated by 1 but if this occurs, instigate the EAP, end the snorkel dive and return to the shore or boat.	L

Hazard	Level of concern (L/M/H)	Mitigation	Level of concern (L/M/H)
9. Hot / Cold injury	M	Before the party enters the water, ensure they are suitably dressed, in the appropriate protective clothing. If they are not suitably dressed don't let them get into the water. Post snorkel dive ensure hot / cold drinks are available depending on the climate.	L
10. Protective clothing	M	Depending on the climate ensure everyone is wearing the correct protective clothing. This may include hood and gloves.	L
11. Signals	M	Ensure everyone in the group is briefed on and understands the signals associated with the snorkel dive. These should include normal / emergency / recall and buddy to buddy signals.	L
12. Brief and debrief	M	Ensure a SEEDS brief and REAP debrief is carried out as a sandwich to the activity.	L

At the end of the lesson students should have a working risk assessment which they can put in their portfolio.

The course instructor should conclude by checking that the students have understood why all the risks associated with the excursion have been checked and acted to make them as low as possible.

Go back

Practical 2: Snorkelling skills

Practical 2: Snorkelling skills

Instructor-led demonstration of a skills set and check on the assessed criteria

This session should take 120 minutes plus approx 30 minutes for changing.

Skills marked with a * are assessed during SGP10. If students are judged as competent during this lesson then they may be signed off as complete.

- **Brief using SEEDS**
- **Kit up and buddy checks**
- **Entry**
- **Snorkel clearing – pea shooter and displacement**
- **Finning techniques – flutter kick, frog fin kick, dolphin kick**
- ***Surface dives in water too deep to stand**
- ***Swimming underwater (25m) on a single breath - ascend safely by looking up and around while swimming, and by holding one hand over the head. Clear a snorkel of water and resume breathing**

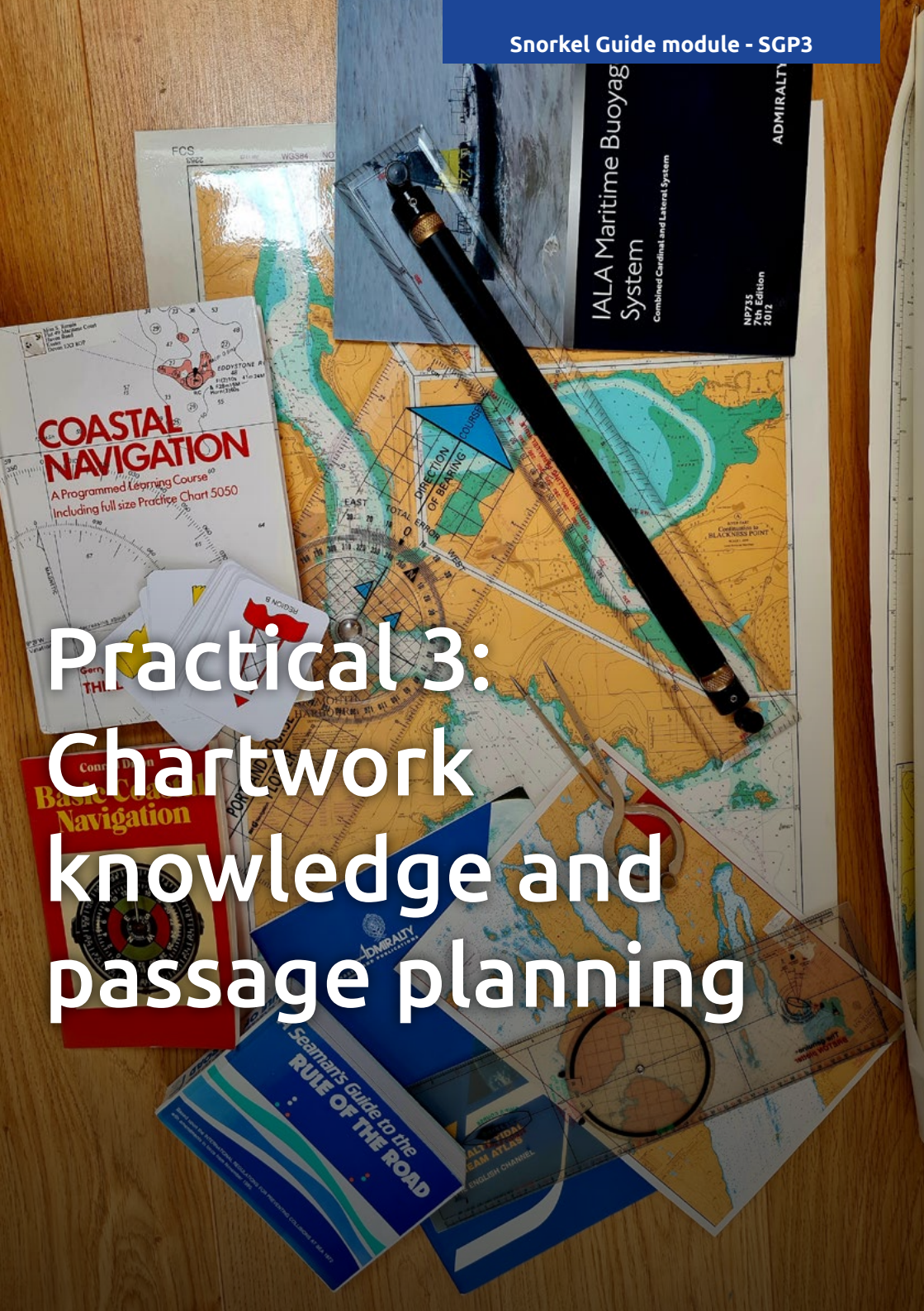
Go back

through the snorkel without lifting the face from the water

- *Swimming on the surface snorkel clearing without lifting face 800m in less than 15m
- *Action for cramp
- *Towing of a casualty – conscious and unconscious
- *Recognition and management of emergency situations (e.g. tired, panicked, or unresponsive snorkeller)
- *Effective emergency surface actions
- *Casualty recovery to the surface from a depth of at least 5m
- *Transportation techniques on the surface
- *Conscious and unconscious casualty recovery from the water

Exit and group debrief - introduce REAP

Course instructor to log any assessment areas deemed to be successfully achieved as well as those areas to be worked on in a future lesson.



Practical 3: Chartwork knowledge and passage planning

Practical 3: Chartwork knowledge and passage planning

Aims

Working onwards from the PowerPoint session, this will be a practical session where the course instructor has set a plan for a snorkel excursion, and the students will use their knowledge and a chart to gain the information required for the snorkel excursion. Any areas where competence is proven can be deemed as matching the requirements at assessment and signed off.

Requirements:

- **Chart of intended area**
- **Ruler – parallel rules – Portland plotter**
- **Dividers**
- **Pencil**
- **Paper**
- **Tide tables**
- **Chart 5011**

Things to cover:

Depending on the experience of the group, there may be some general information to cover such as chart basics, depths and where to find the information (5011).

Once this information has been taught, each student will get a start/ end point and snorkel location (Lat / Long) to locate and come up with the following information.

- **Tidal information**
- **Sea bed type**
- **How far from the shore**
- **How long to get there and back**
- **Any local rules**
- **Compass bearings out and back (reciprocal)**
- **Location – lat / long**

Each location should be a plausible snorkel site which the group could visit. This will result in a repertoire of snorkel sites already planned and prepared, along with a risk assessment and an increased knowledge of what they are likely to find.

Practical 4: Planning to go snorkelling

Practical 4: Planning to go snorkelling

Aims

30 minute session. The length of this session will vary based on the number and previous experience of the students.

Following on from the PowerPoint presentation on planning to go snorkelling, this will be a group practical session looking at all the aspects required to make a successful plan. It does not need to include the chartwork at this stage although for the assessment it will include chartwork, planning and risk assessments.

The course instructor should come with a pre-planned exercise as a demonstration to show the students. This plan should include the following:

- **Date**
- **Time**
- **Tide info – springs / neaps / currents / direction of current**
- **Anticipated weather condition including wind direction**
- **Number of students**

- **Equipment to bring**
- **Appointment of surface supervisor**
- **Hazards and generic risk assessment**
- **Reason for excursion**
- **Travel to site**
- **Access / egress**
- **Shore / boat entry**
- **Protective clothing**
- **Money for food / hot drinks**
- **Emergency Action Plan (EAP)**

Once the plan has been created, the students will each be given a scenario (two will include the area the course is working in, but with differing wind directions).

They will then have an hour to come up with their snorkel excursion plan.

The plans will be delivered to the group as a presentation and student feedback given.

Practical 5: Student planning

Practical 5: Student planning

Aims

The instructor should make sure they have a chart of the area, dividers, parallel rules, pencil and notebook. Having gone through a chartwork session, they will lead a demonstration planning session. This should include choosing a site suitable for a snorkel guiding session as well as a bad weather back up site.

The planning session should include the following:

- **Checking tidal diamonds for slack tides**
- **Seabed type for rocks and reef rather than silt and mud**
- **Knowing what time of day slack water is by knowing the tide information for the day in question.**

In addition, the plan should include - who is on the trip, what is the objective, how to get to the site, how close can one park, are there any facilities, and what is the access and egress like. The conduct of a dynamic risk assessment which will include all the points noted in the risk assessment session earlier in the course. The timings for the whole day, including in water timings. Buddy pairings and for what reason, Emergency Action Plan (EAP). Once both plans are made then the list can be made for the day - this to include: Weather checks, fitness of the group, equipment serviceability, Snorkel Dive Manager (SDM) appointment as well as running through the EAP. A detailed plan would then be handed in to the SDM and the event would go ahead. Once this has been done, students are to be given a plan of their own to work through and this plan will be tested in the assessment for Snorkel Guide.

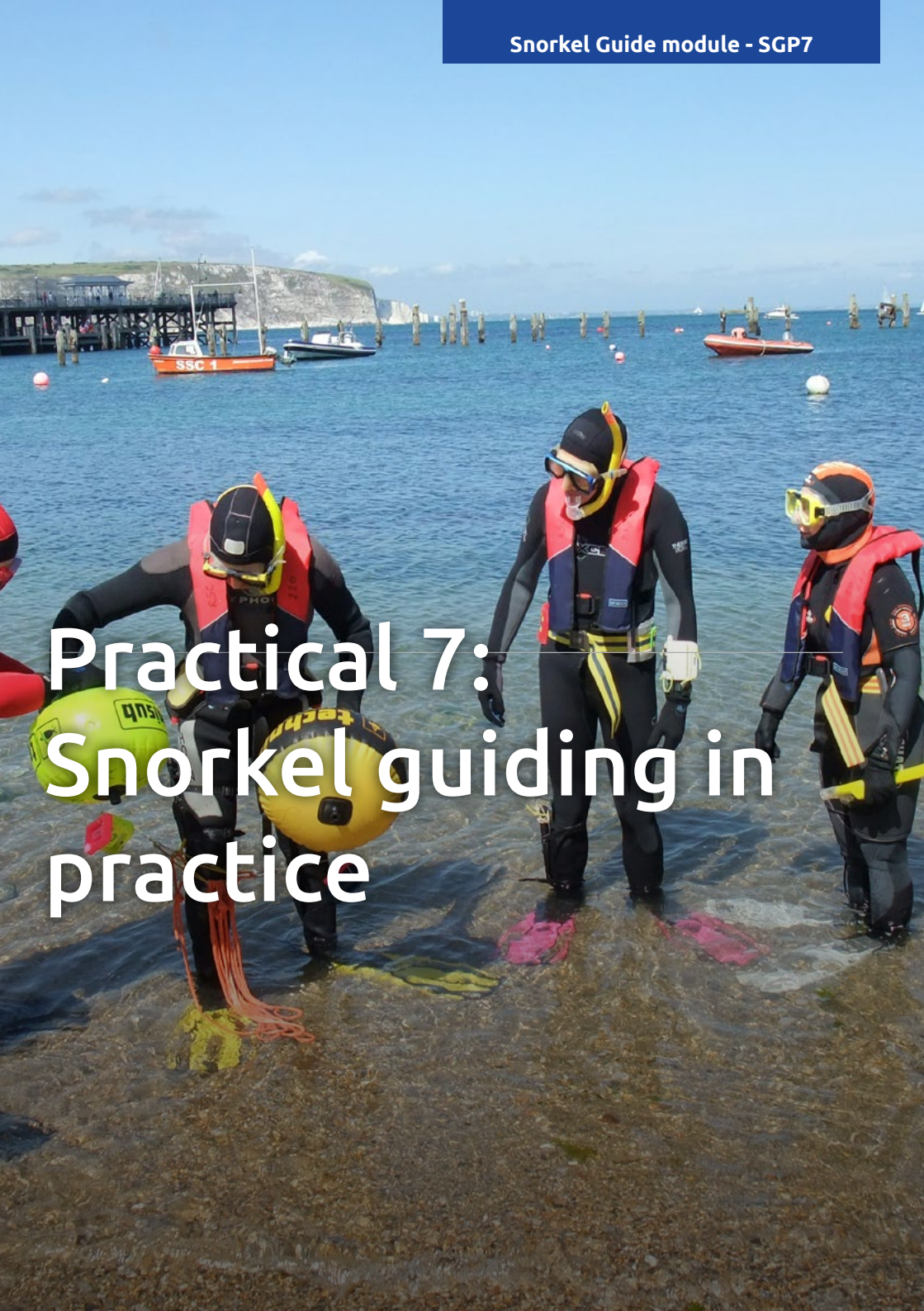
Practical 6: Oxygen administration and use of AED

Practical 6: Oxygen administration and use of AED

Aims

This practical session teaches students how to administer therapeutic oxygen. For people with no previous knowledge, it should take 90 minutes but this may be reduced for those with prior experience.

Instructors are to download the BSAC AED Course from the SDC instructor resources section.



Practical 7: Snorkel guiding in practice

Practical 7: Snorkel guiding in practice

Aims

Taking the plan the course instructor has been developing, run it with the students as the snorkel guiding group. This will be a half-day session and will show the students a complete snorkel guiding excursion from start to finish. One student in the group will be given a scenario on waterproof paper, and at a certain time, they will be asked to act this out. It will involve a rescue back to the point of safety (shore or boat). The course instructor will act this out for the benefit of the students.

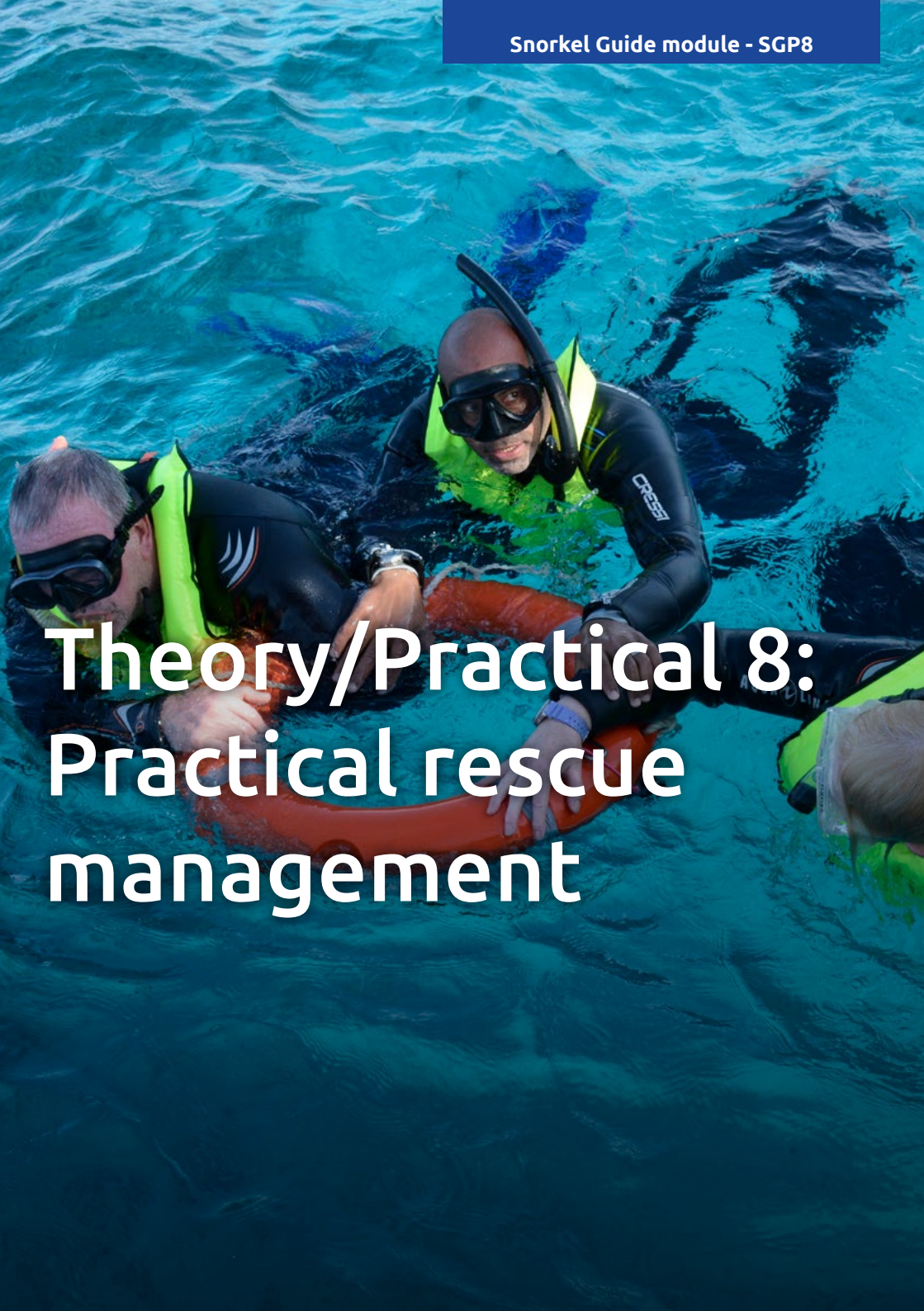
Once back on dry land (classroom or boat), the course instructor will deconstruct the session inviting feedback from the students.

Guiding is in 3 parts:

- **Snorkel excursion brief**
  - **Safety – buddy pairs, everyone fit for the task, dynamic risk assessment completed**
  - **Exercise – the plan, timings and return**
  - **Equipment – snorkel equipment, ancillary equipment, safety equipment**
  - **Discipline – what you can and cannot do**
  - **Signals – the way to communicate, buddy to buddy, guide to group, guide to surface cover and emergency signals.**

- **Snorkel excursion**
  - » Selection of equipment
  - » Kitting up
  - » Equipment fit and function check
  - » Participant accounting procedures (e.g. roll-call of participants entering and exiting the water)
  - » Group control techniques
  - » Continued monitoring of environmental conditions – wind – tide – weather.
  - » Awareness of snorkellers' stress levels
  - » Ensuring environment is respected (e.g. avoiding contact with delicate marine organisms)
  - » Identification of in water hazards
  - » Appropriate reaction to problems and emergencies
- **Post snorkel excursion**
  - » Group debrief
  - » Check all ok
  - » Record the occasion
  - » Equipment care

Go back



Theory/Practical 8: Practical rescue management

Theory/Practical 8: Practical rescue management for snorkelling

Course Aim

To teach snorkel divers how to manage the resources at their disposal in order to make the most effective use of them in a rescue situation. The course also provides an opportunity for further instruction in personal rescue skills to complement those undertaken during previous snorkel diver training, but the emphasis will be on the development of rescue management skills.

Course Overview

The course content follows the relevant parts of the BSAC Snorkel Training Programme very closely. Instructors should base their teaching on the following information. The course programme is designed to be delivered at any confined open water location. The emphasis must be on class participation, and extensive student involvement is essential.

Module 1: Classroom – Intro discussion

Discussion:

The nature of accidents; prevention, anticipation; discuss rescue scenarios; draw out priorities.

This session should be run as a workshop and led by the course instructor. The use of a white board / flip chart will build up the information in a logical and progressive way.

- **List the type of accidents that could occur whilst snorkelling**
  - **Medical injury**
  - **Physical**
  - **Cramp**
  - **Exhaustion**
  - **Hyperventilation leading to unconsciousness / drowning**
- **Signs and symptoms**
  - **Medical – obvious signs of discomfort, unconsciousness, unresponsive, vomiting**
  - **Injury – screaming in pain, clutching the affected area, blood loss**
  - **Physical – a combination of the above**
  - **Cramp – clutching the affected area, inability to move in the water**
  - **Exhaustion – inability to keep up with the group, rapid breathing, mask off face, lack of attention**
  - **Hyperventilation – several deep breaths, unresponsive, unconscious**

- **Prevention**
  - » **Check each person for any medical history**
  - » **Avoiding areas close to other water users, particularly those with engines and propellors**
  - » **Briefing for early intervention for cramp**
  - » **Briefing that the group will stop frequently and the guide will check that everyone is ok on a regular basis**
  - » **Stopping anyone who appears to be consciously or unconsciously hyperventilating.**
- **Rescue scenarios**
  - » **Tow to shore and recover**
  - » **Tow to a boat and recover**
  - » **Assist and continue if casualty makes a full recovery (cramp, exhaustion)**
  - » **Surface first aid on land / boat**
  - » **Helicopter recovery**

Module 2: Rescue management scenarios – No. 1

Personal rescue skills are important, but if an incident is to be resolved effectively, the activities of all involved must be coordinated. Managing this effort is the role of the

Rescue Manager

At the end of this lesson, students should understand:

- **That rescue management starts long before an incident occurs**

Go back

- The long-term factors that contribute to incident prevention
- The factors occurring on site that enable potential incidents to be anticipated
- The activities which contribute to the overall resolution of an incident
- The need for activities to be coordinated - the role of the Rescue Manager

Rescue management - 1

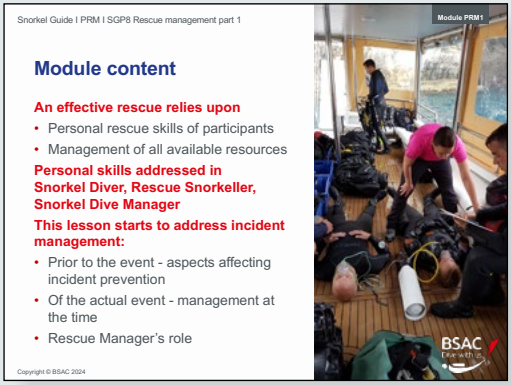
Module content

The more effective and speedy the rescue, the better the chance of recovery on the part of the casualty. This is done by well-practised rescue skills and good management of the issue.

An effective rescue relies upon

- **Personal rescue skills of participants**
- **Management of all available resources**

Personal skills addressed in Snorkel Diver, Rescue Snorkeller, Snorkel Dive Manager



Go back

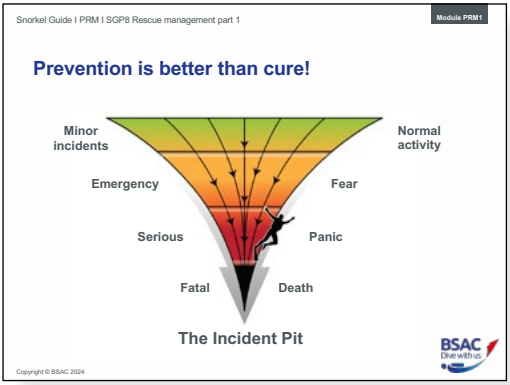
This lesson starts to address incident management:

- Prior to the event – aspects affecting incident prevention
- Of the actual event – management at the time
- Rescue Manager's role

Prevention is better than cure!

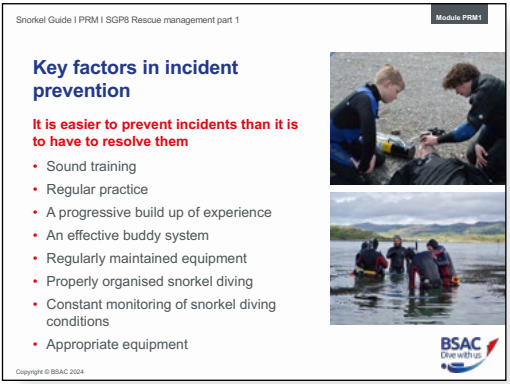
The incident pit

Everyone teeters on the edge of the incident pit. Early action and prevention will help keep everyone on the edge and not failing in!



Key factors in incident prevention

Training should be regular and up to date. Lots of practice so that skills are second nature. Zero to hero usually lacks experience build up time and this can be dangerous. Always have a buddy and to go on organised



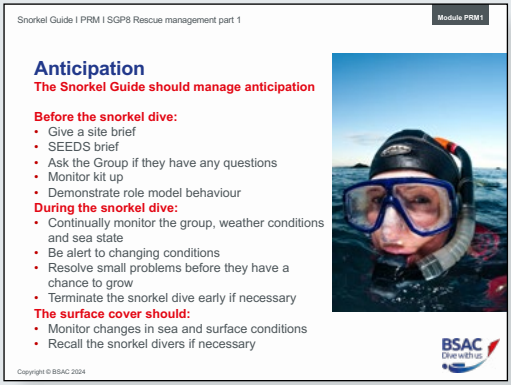
dives when a plan has been thoroughly worked through. Keep checking weather, water surface conditions and each other. Ensure equipment is being properly used and is not a cause for worry.

It is easier to prevent incidents than it is to have to resolve them

- **Sound training**
- **Regular practice**
- **A progressive build up of experience**
- **An effective buddy system**
- **Regularly maintained equipment**
- **Properly organised snorkel diving**
- **Constant monitoring of snorkel diving conditions**
- **Appropriate equipment**

Anticipation

There are many indicators pointing to issues rearing up further down the line. Never be afraid to stop the activity if you have ANY concerns. Ensure you have all agreed an effective recall system.



Before the snorkel dive:

- **Counter snorkel diver nervousness by:**
- **Giving a site brief**

Go back

- Give SEEDS brief for the snorkel dive
- Ask if the snorkel divers have any concerns
- Monitor kit up

During the snorkel dive:

- Continually monitor the group, weather conditions and sea state.
- Be alert to changing conditions
- Resolve small problems before they have a chance to grow
- Terminate the snorkel dive early if necessary

The surface cover should:

- Monitor changes in sea and surface conditions
- Recall the snorkel divers if necessary

When it all goes wrong…

Think of a scenario where a bomb goes off or an explosion – everyone runs in any direction outwards with no thought for where they are running towards – only away – this is because at the start there is no management but as soon as it appears things become more orderly!

Rescues consist of a number of related activities

Unless correctly managed, activities will be

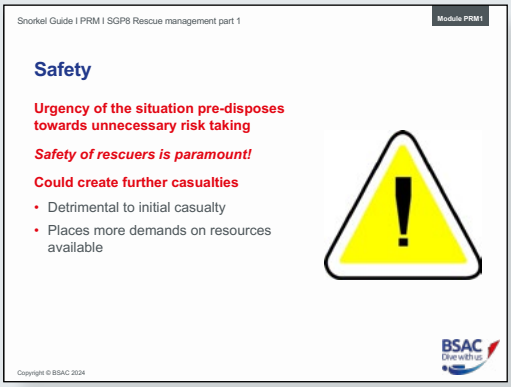
- At best – inefficient
- At worst – counterproductive

First consider what activities are needed

Then consider their management

Safety

If you are going to put yourself into danger then we end up with more casualties.



Urgency of the situation pre-disposes towards unnecessary risk taking

Safety of rescuers is paramount!

Could create further casualties

- Detrimental to initial casualty
- Places more demands on resources available

Go back

Recovery

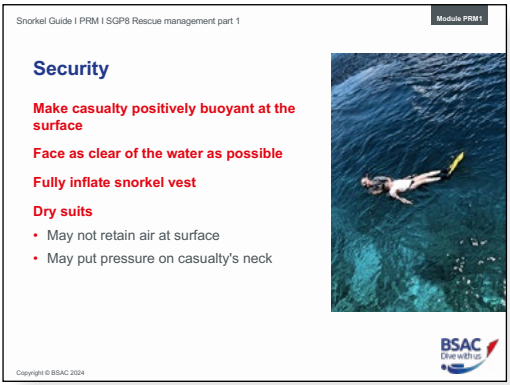
Recovering the casualty is always going to be tricky but the more we practise, the more accomplished and automated we become.

Practise, practise, practise….

Security

The casualty may have put a weighbelt on to assist with gaining neutral buoyancy. Remove the weightbelt at the earliest opportunity.

Whilst unlikely they will be wearing a drysuit – there is some cold water about so you can't not mention it.



Make casualty positively buoyant at the surface

Face as clear of the water as possible

Fully inflate snorkel vest

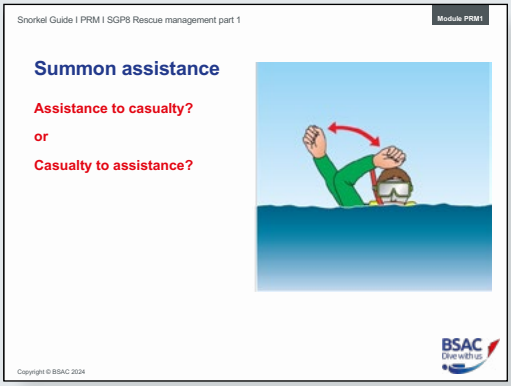
Drysuits

- **May not retain air at surface**
- **May put pressure on casualty's neck**

Summon assistance

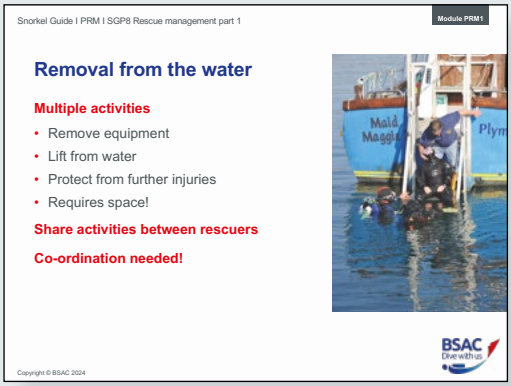
Big shout and arm waves.

Assistance to casualty?
or
Casualty to assistance?



Removal from the water

You can't expect to lift anyone out of the water without telling everyone how to do it and making sure there is room on the side / pontoon / boat for them to land on!



Multiple activities

- **Remove equipment**
- **Lift from water**
- **Protect from further injuries**
- **Requires space!**

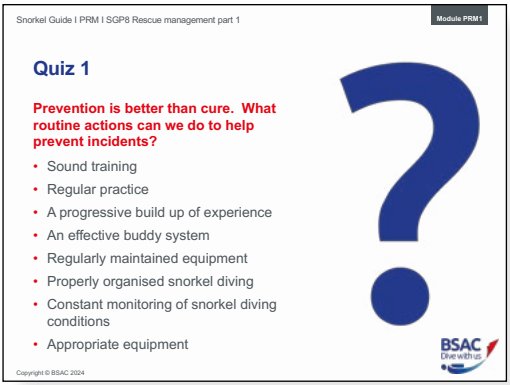
Share activities between rescuers

Coordination needed!

Go back

Quiz 1

Prevention is better than cure. What routine actions can we do to help prevent incidents?



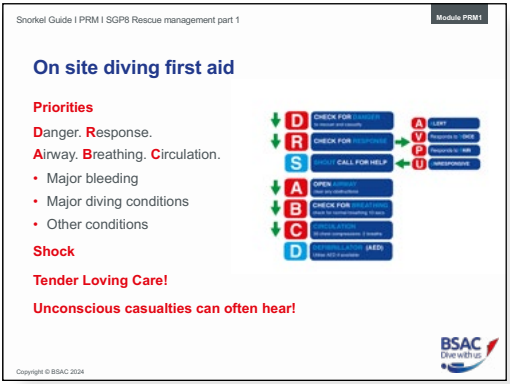
- Sound training
- Regular practice
- A progressive build up of experience
- An effective buddy system
- Regularly maintained equipment
- Properly organised snorkel diving
- Constant monitoring of snorkel diving conditions
- Appropriate equipment

On site diving first aid

First aid will click in once clear of the water.

Priorities

- **D**anger.
- **R**esponse.
- **A**irway.
- **B**reathing.
- **C**irculation.



- Major bleeding
- Major diving conditions
- Other conditions

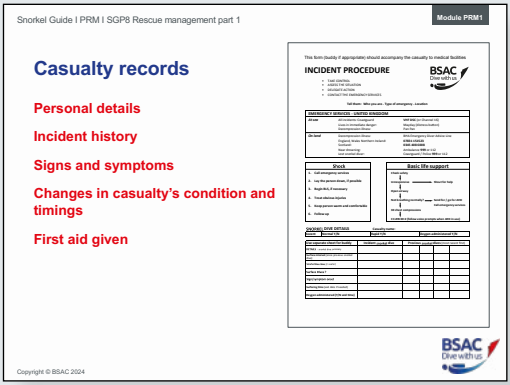
Shock

Tender Loving Care!

Unconscious casualties can often hear!

Casualty records

You can make up your own slate – but there are plenty out there that will do the job. It is important to keep records for the incident report and also to brief any emergency services if the casualty is handed over to them. It is a good idea to take a photo of the slate in case it gets handed over by mistake.



Personal details

Incident history

Signs and symptoms

Changes in casualty's condition and timings

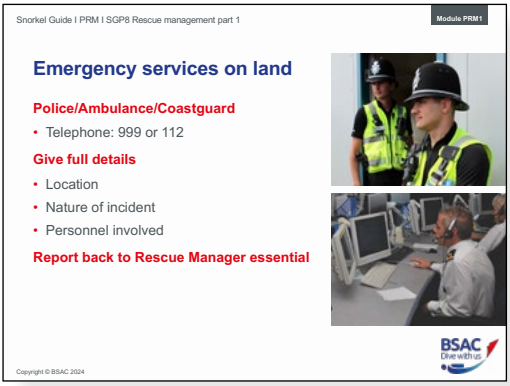
First aid given

(Note this is a dive slate but can be modified for snorkel incidents)

Go back

Emergency services on land

Answer any of their questions. Think about how they can quickly find you – What 3 Words, latitude and longitude or obvious location.



Police/Ambulance/ Coastguard

- **Telephone: 999 or 112**

Give full details

- **Location**
- **Nature of incident**
- **Personnel involved**

Report back to Rescue Manager essential

Emergency services at sea

If you have the chance get on a VHF radio operator's course – this will teach you how to use a marine radio properly.

Contact Coastguard on VHF Channel 16 or DSC

- **Life in imminent danger**

  Mayday, Mayday, Mayday…

- **Assistance required urgently**

  Pan, Pan, Pan…

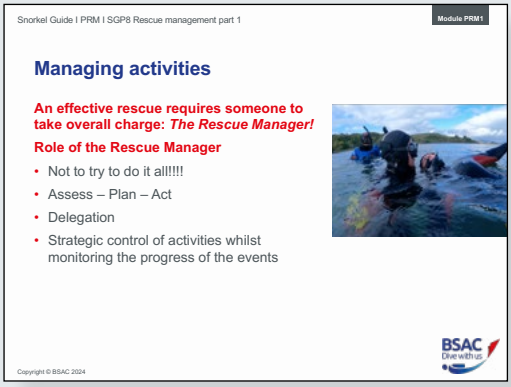
Give full details

- **Vessel's name/call sign**
- **Position and intentions**
- **Nature of emergency**
- **Assistance required**

Report back to Rescue Manager essential

Managing activities

The quicker you step up to assess the situation, make a plan and act on that plan, the quicker the casualty will be attended to and the better the chance of survival/recovery.



An effective rescue requires someone to take overall charge: The Rescue Manager!

Go back

Role of the Rescue Manager

- Not to try to do it all !!!
- Assess – Plan – Act
- Delegation
- Strategic control of activities whilst monitoring the progress of the events

Delegation

A good manager is a good delegator and can be free to overlook the situation. If you get involved, it is much harder to see clearly what is going on all around you.

Break activities into related groupings:

Direct assistance

- Initial rescue at the surface
- Removal from the water

Support

- Preparing oxygen equipment, AED, first aid kits, flares

Communications

- Radio/telephone calls
- Recording the incident

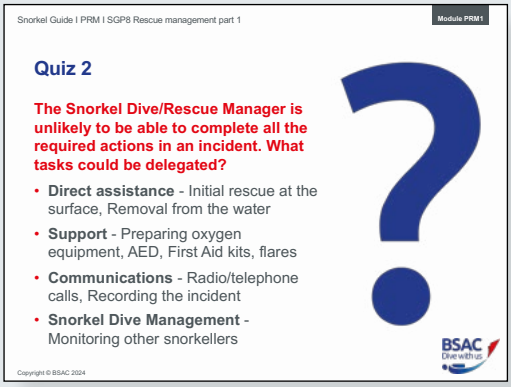
Snorkel Dive Management

- Monitoring other snorkel divers

Allocate activities according to skills possessed

Quiz 2

The Snorkel Dive/ Rescue Manager is unlikely to be able to complete all the required actions in an incident. What tasks could be delegated?

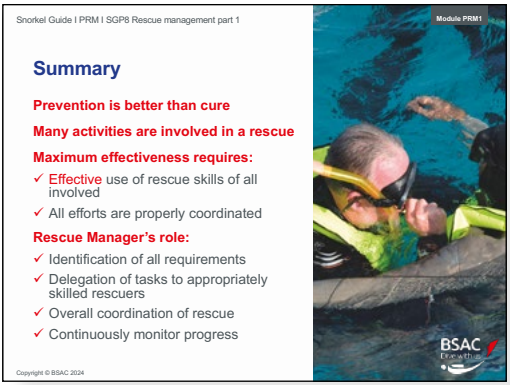


- Direct assistance
  - » Initial rescue at the surface
  - » Removal from the water
- Support
  - » Preparing oxygen equipment, AED, first aid kits, flares
- Communications
  - » Radio/telephone calls
  - » Recording the incident
- Snorkel dive management
  - » Monitoring other snorkellers

Go back

Summary

Ask questions of the students to check they have taken in all of the information.



Prevention is better than cure

Many activities are involved in a rescue

Maximum effectiveness requires:

- ✓ Effective use of rescue skills of all involved
- ✓ All efforts are properly coordinated

Rescue Manager's role:

- ✓ Identification of all requirements
- ✓ Delegation of tasks to appropriately skilled rescuers
- ✓ Overall coordination of rescue
- ✓ Continuously monitor progress

Any questions?

Rescue management - 2

Module content

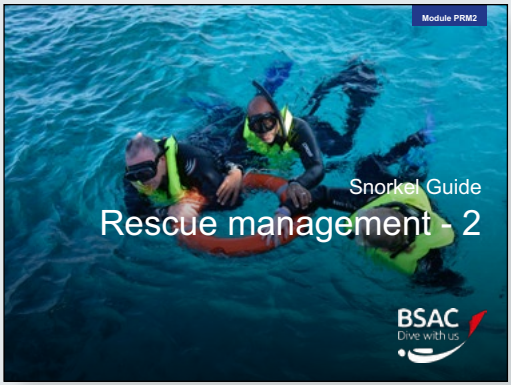
This session addresses all the do's and don't after an incident has occurred.

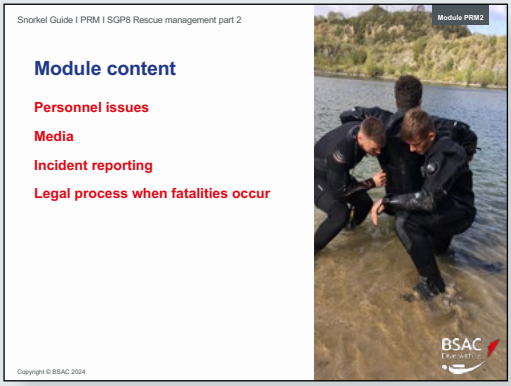
Personnel issues

Media

Incident reporting

Legal process when fatalities occur

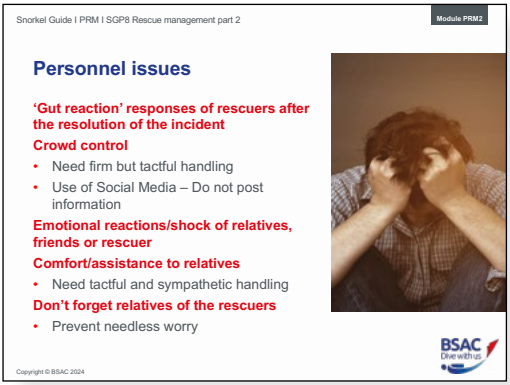




Go back

Personnel issues

Some incidents are delicate in nature and require some special handling. This includes the rescuers who may need some counselling, the onlookers, who need to be handled in a tactful way so that they are not able to see what is or was happening. Then there are the relatives and and perhaps the relatives of the rescuers.



'Gut reaction' responses of rescuers after the resolution of the incident

Crowd control

- Need firm but tactful handling
- Use of Social Media – Do not post information

Emotional reactions/shock of relatives, friends or rescuer

Comfort/assistance to relatives

- Need tactful and sympathetic handling

Don't forget relatives of the rescuers

- Prevent needless worry

Media

Media will try to get their shots and info for their story. They can put words into your mouth without so much as a regret. Better to stay silent and not be ‘that person’.

Keep media away from personnel involved in any rescue activities

Safest course of action to make no immediate comment

- Comments taken out of context
- Comments sensationalised
- Portrayed as criticism or blame
- BSAC HQ can provide guidance on formal statements

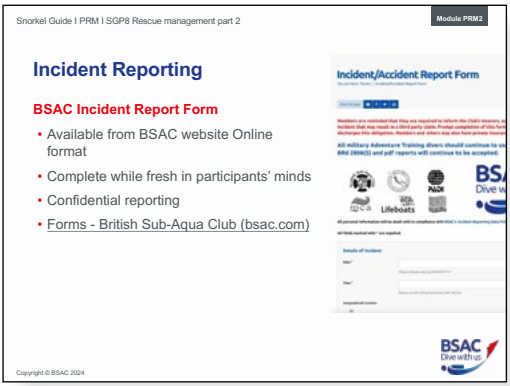
On no account give personal details of any individuals!

Avoid posting anything on Social Media

Go back

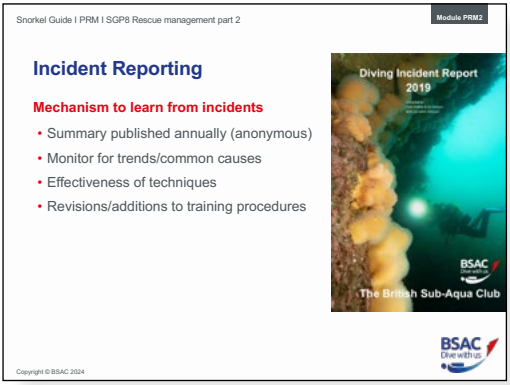
Incident reporting

Rest assured – the reporting form is anonymous. It is an important part of the process and better to do it when the incident is fresh in one's mind.



BSAC Incident Report Form

- Available from BSAC website online format
- Complete while fresh in participants' minds
- Confidential reporting
- Forms - British Sub-Aqua Club (bsac.com)



Mechanism to learn from incidents

- Summary published annually (anonymous)
- Monitor for trends/ common causes
- Effectiveness of techniques
- Revisions/additions to training procedures

Fatalities

Thankfully this is a rarity. It is important to understand what happens in our own country.

Safety record of the sport means fatalities are rare events

Legal process to be fulfilled whenever a sudden death occurs from any cause

Processes vary throughout the world

Will now consider:

- **Roles and responsibilities**
- **Investigation of an incident**
- **Insight of legal process**
- **What can we do?**

Legal systems

The UK system is well tried and tested. Usually, the cases are opened and adjourned closely following a fatality and then information and evidence is collated.

Go back

These vary by locality within the UK

- HM Coroner (England, N. Ireland & Wales)
- Procurator Fiscal (Scotland)

Purpose of the Inquest/Inquiry

- Ascertain who has died, how, when and where
- Not to apportion blame
- Can make recommendations to prevent further deaths

Overseas - research and be aware of local procedures

The legal process

This is a time-consuming job so the actual inquest may not happen until a year or so after the event.

Investigations - This needs to be made clear the investigation is conducted by the Police (Not BSAC, the Branch DO or anyone else).

Coroners produce a “conclusion” no longer termed a “verdict”.

Opening hearing

- Identification of deceased
- Results of post-mortem
- Interim death certificate

Investigations

- Medical and past history
- Snorkel dive history & experience
- Snorkel conditions
- Snorkelling equipment

The final hearing

- Evidence from the investigation and witnesses
- The conclusion

What can we do at the incident?

Because the process works over many months, it is important to do all of the above actions. Expert witnesses are hand picked by the coroner. Usually they will have the correct qualities to assist the case.

Preservation of the scene

Incident log

- What happened
- Times
- Actions taken and treatment given

Go back

Retention of equipment

- Keep all casualty's equipment together
- Protect from any interference

Casualty's and witness' personal details

Do not offer to be an 'expert witness'

- Requires both technical and legal expertise
- Insurance cover requires referral via BSAC HQ

Putting it all in context....

We are very good at what we do – BUT there are always going to be exceptions which are generally out of our control.

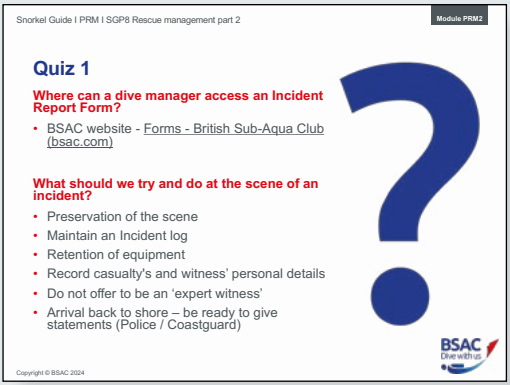
Snorkel diving has a very good safety record

Safety doesn't happen by accident!!!

Quiz 1

Where can a Dive Manager access an Incident Report Form?

- BSAC website - Forms - British Sub-Aqua Club (bsac.com)



What should we try and do at the scene of an incident?

- Preservation of the scene
- Maintain an incident log
- Retention of equipment
- Record casualty's and witness' personal details
- Do not offer to be an 'expert witness'
- Arrival back to shore – be ready to give statements (Police / Coastguard)

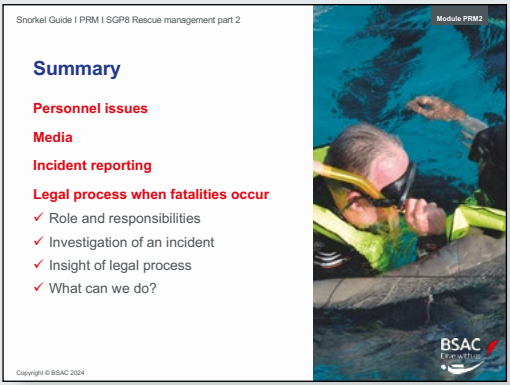
Summary

Personnel issues

Media

Incident reporting

Legal process when fatalities occur



Go back

- ✓ Role and responsibilities
- ✓ Investigation of an incident
- ✓ Insight of legal process
- ✓ What can we do?

Any questions?

Practical rescue management practical session

Achievement targets

At the end of this session, students should:

- **Have experienced managing at least one rescue scenario**
- **Have participated in at least one other scenario**
- **Have developed an understanding of how to take a strategic view of an incident, including assessing the activities required**
- **Prioritising those activities**
- **Delegation of activities to personnel with appropriate skill**

The open water rescue scenarios should concentrate on the management of rescue activities. It is not intended that they become lessons for teaching personal rescue skills. The exercises will require prior detailed thought and planning by the instructor. Having the scenario mapped out on a slate will help to ensure that the students and any other participants are briefed properly, and will also act as a checklist for the subsequent monitoring and debriefing of the students.

Go back

Each scenario should commence with an instructor brief on the exercise and, where appropriate, a SEEDS brief and detailed buddy check. Make sure that the student acting as Rescue Manager understands the nature of the incident. The initial exercises should be run in slow time, so that as the exercise progresses, the instructor can draw from the students the sequence of actions that they are to take, and what considerations they should be taking into account. Where appropriate, the exercise should be stopped to discuss any points and possibly try alternatives. Once the students have fully assimilated the concepts, the pace of the exercises should be increased to a more realistic rate. Remember, however, that this is a teaching exercise, not an assessment.

Following each exercise, the instructor should conduct a full group debrief. This debrief should cover the following:

- **How the incident was assessed**
- **The actions that were taken**
- **How the tasks were delegated**

How delegation allowed multiple tasks to be carried out concurrently

- **The actual rescue skills used**

Following the entire set of scenarios, carry out a 15 minute outline review with the whole course, reviewing the achievements and difficulties of all the scenarios.

Example scenarios include:

- **Snorkel diver gets cramp and is in agony and then starts to go underwater**
- **Snorkel diver goes unconscious whilst on a snorkel safari. Buddy goes to help and then starts panicking**

- **Snorkel diver collapses as they get back onto the boat – goes unconscious and bangs head at same time**
- **Snorkel diver reports buddy has carried out a surface dive but has not come back up**
- **Instructors may need to tailor the scenarios to suit**
- **Accidental injury**
- **Boat damaged or immobilised – everyone on board**
- **Boat damaged/immobilised – snorkellers in the water**

Instructors may need to tailor the scenarios to the local conditions, and may also need to construct other scenarios depending on the number of students, their progress and abilities. The following notes give additional guidance on constructing and running scenarios.

Group size and staffing

By its nature, this lesson requires a group of snorkel divers, ideally a ratio of six snorkel divers per instructor, but no less than four. Every student should have at least one turn as Rescue Manager of a scenario which requires enough coordination to make it a useful personal learning experience for them. The lower limit for group size is set by the need to have sufficient people available to carry out the rescues, while the upper limit is set by the time it takes to run enough scenarios to give everyone their turn.

It is not necessary for all the members of a group to be PRM students. Other instructors and suitably qualified and briefed helpers may participate as casualties, as rescuers to be managed, and as bystanders. PRM students should take an active part in each rescue, but bear in mind that if they are briefly underwater or far from the main group - towing or being a casualty, for example - they will be

unable to observe the scenario properly. Try to ensure that this type of activity is minimised for the students, and shared out fairly between them.

Scenario embellishment

A technique which many instructors find effective, is to brief members of the group privately to act out roles which will make the Rescue Manager's job more difficult, by simulating the presence of disruptive people with their own agenda. Used wisely, this approach can be both instructive and good fun. However, make sure that people do not get carried away with acting to the extent that it detracts from other students' learning of the core rescue management skills. Embellishment is best reserved for later scenarios, once the basic skills have been grasped. The following roles have been used successfully on PRM courses in the past. Use them or not as you see fit.

- **Power struggle**
  A very assertive person, either within the group or a bystander, perhaps someone from another snorkel diving group on the same site, keeps giving instructions to members of the group, and undermining the Rescue Manager's directions. The Rescue Manager has to get them under control.
- **Grieving relative**
  A close relative, typically a partner, close friend, or parent of the seriously injured casualty is on the scene. They are distraught, and get in the way of rescue and first aid activities. The Rescue Manager has to get them under control.
- **Public distraction**

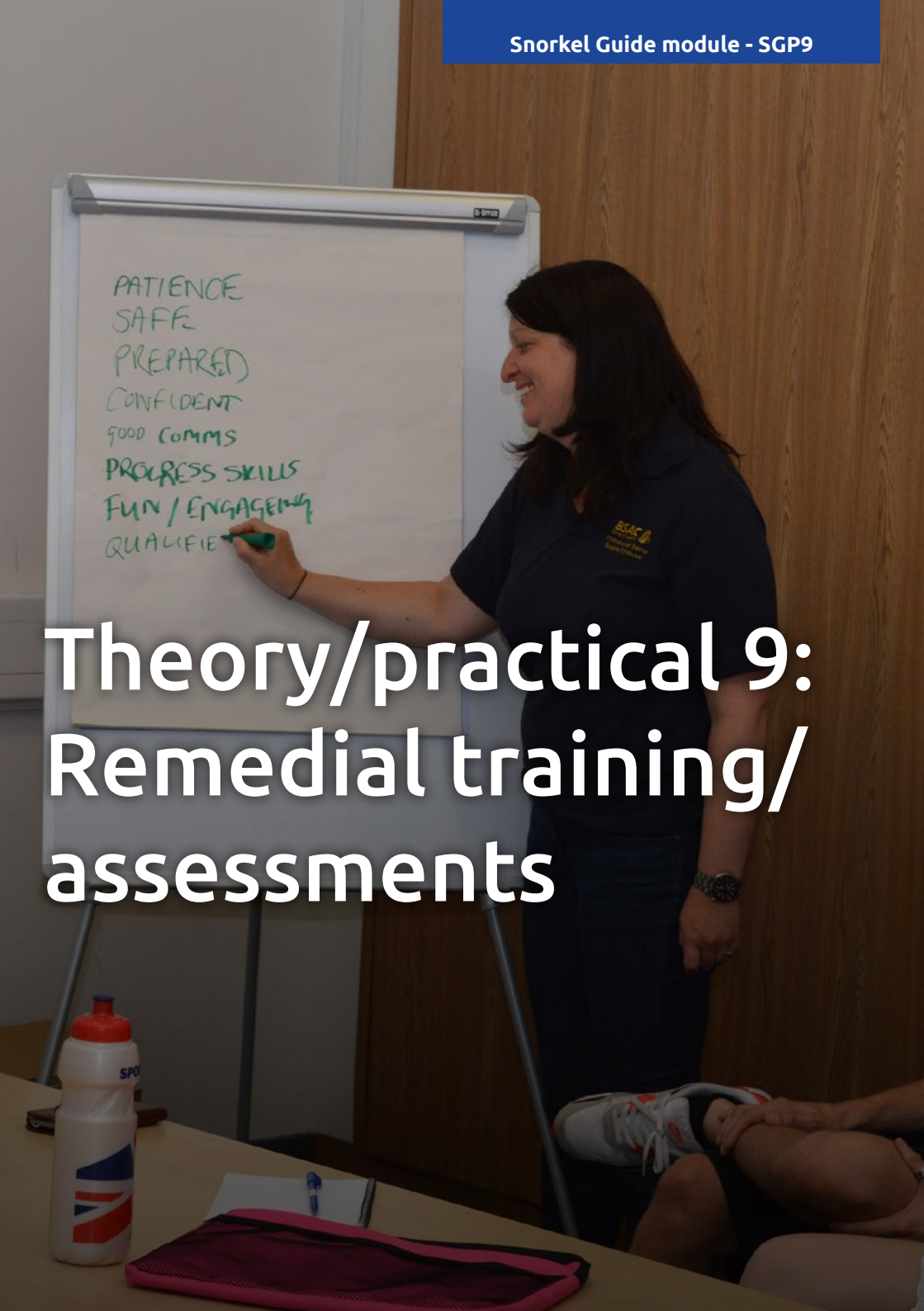
There are some persons nearby who are causing a disturbance (shouting abuse, throwing stones, firing air rifles, vandalising

property, etc.) The Rescue Manager has to get someone to get them away from the scene.

- **Press**
  A photographer/videographer is trying to take closeup photographs and is getting in the way and upsetting the casualty and the casualty's friends. An alternative/complementary role is for the press person to ask intrusive questions about the incident.
- **Argy-bargy**
  The group includes two people who begin to argue with one another. Apportionment of blame is often a good topic for the argument. The argument becomes very heated, and distracts the rescue efforts. This embellishment can be combined with elements of grieving relative. The Rescue Manager has to get them calmed down or moved away.
- **Chaos**
  This is a non-role, in the sense that a scenario is run without a Rescue Manager. Usually, chaos ensues because nobody is in charge.
- **Hypochondriac**
  A snorkel diver exhibits excessive, and unwarranted (by the circumstances of the scenario) anxiety about his/her health. They claim to have almost every symptom that is suggested, and distract attention from other, genuine casualties. The Rescue Manager has to deal with them safely.

  Whilst there is no formal assessment at the PRM, it is with the instructor to ascertain that all students have participated, managed and understood all of the 'situations'.

  It is anticipated that this section of the Snorkel Guide course will take half a day.



Theory/practical 9: Remedial training/ assessments

Theory/practical 9: Remedial training/ assessment

Aims

If this is required, it will be because a student or students have fallen short of one or more aspects of the assessment. The instructor should decide whether remedial training is required before any reassessment to give the student the best possible chance of success.

This will be on an individual basis and will require 1:1 discussions with the student involved. The instructor should work out whether more planning by the student needs to be carried out or whether it is practical elements that are the problem. Once any weak areas have been discussed the student should be reassessed as soon as is practicable.

Practical 10: Assessments

Practical 10: Assessment

Assessment criteria and competency check

- **Oxygen administration**

The student must have been trained to administer oxygen either through the Snorkel Guide course or other training, such as the BSAC Oxygen Administration course.

The student must understand the situations when oxygen may be required. They should also be able to correctly administer oxygen to a conscious and unconscious casualty, including assembly of the equipment.

- **AED use**

  The student must have been trained to use an AED either through the Snorkel Guide course or other training, such as the BSAC AED course.

  The student must understand the situations when an AED may be required and be able to use one correctly.

- **First aid**

  The student must have been trained to provide first aid either through the Snorkel Guide course or other recent training, such as the BSAC First Aid for Divers course.

  The student should be able to respond appropriately to a variety of situations when first aid is required.

Go back

- **Chartwork**
  The student must have been trained in chartwork either through the Snorkel Guide course or relevant training, such as the BSAC Chartwork and Position Fixing course.

  The student should demonstrate an understanding of seabed features, know how to interpret tides and use this information to plan snorkelling. They should also be capable of passage planning using waypoints, latitude and longitude as well as distances and compass bearings.

- **Surface supervisor**
  The student must have been trained in snorkel diver management either through the Snorkel Guide course or relevant training, such as the BSAC Snorkel Dive Manager course.

  The student must demonstrate an understanding of how to safely supervise groups of snorkellers. This should include appropriate planning, including use of weather forecasts, and knowledge of how safety is influenced by changing conditions. They should be able to monitor a situation, conduct dynamic risk assessments, anticipate events and take appropriate action, including recalling snorkellers.

- **Snorkel excursion brief**
  The student must be able to deliver a comprehensive brief to prepare a group for a snorkel excursion.

  This should include buddy pairings, weather and sea conditions to be expected, timings, actions in the event of an emergency, reason for excursion and what to expect, checking health of group and ensuring all equipment is fit for purpose.

- **Snorkel excursion**
  The student must demonstrate that they are capable of continuously monitoring the group, weather and sea conditions in order to keep the planned excursion safe.
- **Snorkel excursion debrief**
  The student must be able to deliver a comprehensive debrief, based on REAP, to a group.
- **Equipment care**
  Student is able to lead on equipment care. This should include placement of equipment so that it does not get damaged, thorough washing in fresh water and allowing to air dry before stowage. Checking nothing is damaged / reporting and isolating damaged equipment.
- **Emergency action plan (EAP)**
  The student must have been trained to take the appropriate actions in the event of an emergency either through Snorkel Guide course or other recent training, such as the BSAC Advanced Snorkel Lifesaver course.

  The student must be capable of assessing an emergency, plan the actions required and then carry them out competently.
- **Rescue skills**
  The student must have been trained to rescue a snorkeller either through the Snorkel Guide course or other recent training, such as the BSAC Advanced Snorkel Lifesaver course.

  The student must be able to lift a snorkel casualty from 5m depth and make buoyant before tow and landing them on the shore or into a boat. They should also be able to understand and execute actions for cramp or tired swimmer.

Go back

- **Group management**
  The student must have been trained to manage snorkellers either through the Snorkel Guide course or other recent training, such as the BSAC Snorkel Dive Manager course.

  The student must show that they can safely manage a snorkel excursion from start to finish.
- **Surface dive**
  Student can carry out a surface dive with correct buoyancy adaptation to 5m depth.
- **Underwater swim 25m**
  Student can surface dive and swim continuously underwater for a distance of 25m on one breath hold dive with adequate buoyancy to maintain an underwater aspect.
- **800m snorkel swim**
  Student can carry out a continuous swim using snorkel, fins and mask, for 800m without stopping. Head should be down in the water at all times so that they are breathing through the snorkel.
- **Head down snorkel clearing**
  Student should be able to maintain the 800m swim with their head in the water so that they are breathing through the snorkel and not lifting their head up to take the snorkel out.
- **Different finning techniques**
  Student should be able to show that they can scissor kick, frog fin kick and dolphin kick to alleviate the monotony of kicking in the same way which can promote cramp.

- **General skills level**
  Student should be able to fit equipment confidently, be able to clear the snorkel, both pea shooter as well as displacement clearing, prove different finning techniques, surface dive, swim underwater and on the surface breathing through the snorkel.
- **Theory knowledge**
  Through continual assessment, the student should demonstrate that they understand they theory required for Snorkel Guides.
- **Working as a team**
  Students should be able to work as a team – either as the team leader or a deputy working for someone else. Plans should be agreed by the whole group. (Plan the snorkel dive and dive the plan).
- **Leadership skills**
  Students should be able to demonstrate good leadership when they are in charge of the group. This should include the ability to plan, decision make, stop or move the group, be at the front, be able to keep up at all times (good levels of fitness), be able to stop and re-assess if required.
- **Familiar with locations used**
  Students should understand the area of guiding having planned the session using charts and local knowledge to obtain as much information as possible. Students may well have carried out a 'staff recce' in order to check the plan will work with real students. This would be good practice.

If the instructor is satisfied that ALL OF THE 22 AREAS OF ASSESSMENT have been covered and achieved, then they may award the Snorkel Guide qualification to the student.

Go back

Candidate assessment report

BRITISH SUB-AQUA CLUB
SNORKEL TRAINING PROGRAMME

Snorkel Guide Course

Candidate Assessment Report

Candidate Name	Membership No.	Date

Examiner Name	Venue	Event number

Element	Description	Pass	Fail	Retake Pass
1	Oxygen administration			
2	AED use			
3	First aid			
4	Chartwork			
5	Surface supervisor			
6	Snorkel excursion brief			
7	Snorkel excursion execution			
8	Snorkel excursion debrief			
9	Equipment care			
10	Emergency action plan (EAP)			
11	Rescue skills			
12	Group management			
13	Surface dive to 5m			
14	Underwater swim 25m			
15	800m snorkel swim			
16	Head down snorkel clearing			
17	Different finning techniques			
18	General skills level			
19	Theory knowledge			
20	Working as a team			
21	Leadership skills			
22	Familiar with locations used			

Senior Examiner's Comment:

Please return this form via email **drt@bsac.com**