

PROTOCOLS FOR DIVING

Diving Unit

Faculty of Fisheries and Marine Sciences & Technology University of Ruhuna Sri Lanka

Main Objective:

This document explains qualification criteria and regulations that need to control snorkelling and SCUBA diving exercises undertaken by the Diving Unit of the Faculty of Fisheries and Marine Sciences & Technology, University of Ruhuna as a part of a training and research/field work requirement, or as part of a recognised degree programme of the study, including undergraduate and postgraduate studies.

These procedures shall apply to all who undertake diving as part of research or study activities carried out under the auspices of the Ruhuna University. All divers (staff, students, volunteers and visitors) are obliged to study these procedures and adhere to them at all the times of the program.

Health and Safety

Diving requirements

Medical Requirements

- Must be performed by a Sri Lanka Medical Council (SLMC) recognized medical doctor
- All divers shall have a dive medical done annually to AS2299 standards
- All Visiting divers shall have a dive medical obtained within the last 12 months to AS2299 or equivalent
- All volunteer divers to have a current medical to AS2299
- After any accident/injury or illness, the Dive Officer may require that the diver be medically re-examined before they are considered fit to dive again

Experience

- Minimum age 18 years
- Must hold at least an open water diving qualification obtained from an internationally recognised SCUBA training and certifying organisation
- Must have at least 10 hours of underwater diving experience after the certification

Safety measures

Hazard Identification, Risk Assessment and Control

Dive Team Leader should ensure that a suitable dive plan, is conveyed to, and understood by, all members of the diving team before any diving operation.

An assessment should be based on at least:

1. The identification of hazards in the workplace
2. The nature of the risks created by those hazards
3. The degree of exposure to those risks
4. The potential of those risks to cause injuries and illness; and
5. The measures required to control the exposure to those risks.

The following parameters should be examined for their effects on the dive from the perspective of operations both on the surface and below, including, but not limited to:

1. Strength and direction of the wind and the degree of influence that it may have on the diving operation and emergency response capability
2. Current and tide
3. Visibility
4. Entrapment hazards
5. Depth at worksite
6. Water temperature
7. Time of day
8. Underwater terrain
9. Atmospheric temperature and humidity
10. Contaminants
11. Isolation of dive site.

Task Related Factors

The complexity of the diving task or the presence of a component which is non-routine in nature may increase the level of risk associated with a diving operation.

Hyperbaric/Physiological Factors

Hyperbaric and physiological factors include:

- Frequency of diving, including multiple ascents
- repetitive diving and multi-day diving
- Depth of dive
- Breathing gas
- Exertion required to reach dive site task or conduct task
- Excessive noise
- Immediate pre-dive fitness (prior dives, prior physical exertion, fatigue, recent illness)
- Altitude exposure.

Associated Activity Factors

- Manual handling
- Boat handling
- Dive platforms.

Other Hazards

- Dangerous marine animals
- Water inlets
- Shipping movements
- Use or presence of hazardous substances

- Biological pollutants or explosives
- Other hazards peculiar to the dive location(s).

Emergency Response Factors

There should be an assessment of what would be required in case of an emergency. The assessment should include the consideration of:

- The location
- Availability of appropriate emergency combating equipment's ?/systems
- Emergency response procedures.

Diving Equipment

- All diving equipment must be properly maintained, regularly serviced and tested.
- All dive equipment is supposed to wash, clean and air dry after each usage and stow in a clean, dust-free environment

Safety Equipment on Dive Boats

All boats used for diving must carry:

- Oxygen resuscitation equipment
- Lifelines
- Dive flag
- Radio
- Water bottle
- Anchoring system
- Emergency marker buoy
- Spare search and rescue tank(s) to be carried if dive at a distance of more than 5 minutes running time from the shore station
- Waterproof safety container containing safety equipment
- Fire extinguisher

Health and safety of Divers

Diving restrictions

1. Food and drink - In most circumstances' normal daily food and fluid intake is allowed depending on individual discretion. A balanced diet and adequate fluid intake (at least 2L per person per day) must be is ensured, when diving activities are planned to be conducted in remote areas.

Diving should be avoided for 2 hours following a heavy meal and regular light meals are allowed during the day's diving activities.

2. Alcohol

All divers need to be refrain from alcohol consumption until the last dive of the day. Diving activities should not be undertaken within 8 hours of consuming any intoxicants.

Alcohol may increase the susceptibility to decompression sickness. Further, alcohol known to enhance the effects of inert gas narcosis and may leads to heat loss in cold water exposure. Diving with a hangover is dangerous and is not permitted.

3. Sleep

Adequate rest and sleep are essential before any diving operation. Fatigue during diving can be dangerous and a fatigued diver should not be permitted to dive.

4. Cold

A cold diver can be liable for rapid fatigue, cause errors of judgement and have increased risk of decompression sickness. The combination of fatigue and cold should be avoided at all costs in diving operations.

Following precautions can be used to ensure divers safety and minimise the problem of fatigue and cold.

- Divers should keep warm before the dive.
- Limit dive times to reduce the amount of heat loss.
- Plan dives to avoid frequent immersion and draining of wet suits in cold water. e.g. a series of short multiple dives.
- Try to take a warm shower or bath (37-42°C), as soon as is possible
- Allow sufficient time between dives for the divers to rewarm adequately.
- Provide hot drinks and a high daily calorie intake during cold water diving. Alcoholic drinks are NOT to be used to warm up a cold diver, as they have the opposite effect.

5. Drugs

In general, intake of any drugs during diving should be avoided where possible due to the possibility of covering up serious symptoms.

Many drugs in common use has been shown in little or no change in the toxicity hyperbaric conditions. But, drugs can influence diving safety in indirect ways, such as impairing judgement and concentration, or by altering a diver's susceptibility to narcosis and decompression sickness.

Although, individuals under medical conditions are unlikely to involve in diving, the common practice of "self-medication" may present a hazard, particularly in three situations: headaches, upper respiratory tract problems (e.g. hay fever), and seasickness.

Headaches: All types of pain-relieving drugs should be avoided during diving activities. With any pain sufficiently severe to require drugs, any diver is not fit to dive and should not be allowed for diving.

Upper Respiratory tract problems: Any routine medication should only be administered under medical supervision. Routine self-medication with nasal drops to facilitate ear cleaning may be medically hazardous. The presence of any form of upper respiratory tract infection (common cold, sinusitis, middle ear infection, tonsillitis, sore throat...) imposes an absolute ban on diving until the infection has cleared.

Seasickness: Two groups of drugs are used.

- (I) Hyoscine - Although, this is the most suitable drug, marked drowsiness can occur. If possible, the drug should be tried initially during a period of non-diving sea travel.
- (II) Antihistamines - These are often more effective against motion sickness, but drowsiness is frequently marked. Considerable individual variation occurs in response to the drugs. They MUST be tried initially during a period of non-diving sea travel. Medical advice should be sought if a suitable drug is not found.

6. Diving before or after travel (by car or aeroplane) or after decompression sickness

The diver shall have adequate rest before undertaking any diving operations, when diving after travel. Similarly, when travelling after diving, altitude exposure is a potent precipitator of decompression illness. After a dive, a minimum delay time should be observed.

Diving Emergency Procedures

Many diving medical problems require immediate hyperbaric treatment if they are to be successfully resolved. In the field, or during transport to a recompression facility, the best first aid that can be administered for injuries/illnesses such as DCI or air embolism (and others) is Oxygen delivered at as close to 100% as possible.

Emergency Response Protocol

Site specific emergency response protocol needs to be designed.

- a) DRABC. (D- Danger/ R- Response/A- Airway/B-Breathing/C-Circulation)
Recall all divers/swimmers to the boat or shore. (If possible, recover all equipment after any accident, and separate it from other equipment for subsequent examination). The Dive Leader may decide not to recover equipment if doing so would be unsafe or cause undue delay.
- b) Seek appropriate medical assistance and follow any directions you are given.
- c) Ensure other members of the dive team are not at risk and that all divers are present.
- d) Ensure that in the emergency, no equipment has been left in a dangerous condition.
- e) Organise evacuation to the nearest hospital or vacant recompression chamber as dictated by the circumstances, the casualty's condition, or medical advice.
- f) Record the details of the casualty's dive immediately, including where the accident occurred, and the sequencing of treatment. Conditions of the emergency can often lead to neglect in completing the diving log/record, which may make it impossible afterwards to determine the time for which the diver was in the water. Such a record is extremely useful to the doctor treating the casualty, in the construction of a therapeutic profile, and in helping with the understanding and avoidance of future diving accidents.
- g) Ensure the divers dive record sheets and (if possible) their logbook are available for the doctor, particularly if recompression is required. Details of the diver's last medical examination may be useful if these can be obtained quickly
- h) When the immediate emergency has passed and all necessary steps have been taken to assist the casualty, a full record of the incident must be compiled by the Dive Coordinator (or by the University Dive Officer in the event the Dive Coordinator is incapacitated). To help with this, all personnel involved in the incident should endeavour to make notes on what happened as soon as possible after the incident, obtaining details from other divers, noting exact times etc.
- i) It must be remembered that the buddy of any diver who develops symptoms of decompression sickness, even on a dive apparently carried out according to the tables, may also develop symptoms later and require recompression. In such a situation, the dive buddy should be kept under observation for at least 24 hours after the incident.

Adopted using PADI guidelines and Murdoch University/Western Australia Diving protocols.