Objectives

You should be able to:

1. Differentiate between commercial and recreational diving and list the equipment used. Q1

2. Describe the basic principles of diving physiology. Q2

3. Demonstrate an awareness of the aetiology of diving related illnesses. Q3

4. Communicate effectively with the key personnel involved in the diving operations. Q4, Q5

Q.1

Look at the list of diving factors, in the context of diving related illnesses, which of the factors are more likely to be related to commercial diving and which to recreational and which might be to both?

1. Lead boots

2. Ascent time

3. Scuba Gear

4. Weight belt

5. Time

6. Face mask

7. Helmet

8 . Ascent time

9. Bottom time

10. Diving Chamber

11. Oxygen

12. Stops

13. Pressure/Volume changes

14. Demand Valve

|  |  |  |
| --- | --- | --- |
| Commercial | Both | Recreational |
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Q.2

The partial pressure of oxygen in a deep diving system is maintained at 0.4 ATA. The system is diving 90 metres. You have a mix of oxygen and helium to provide the correct pp02, what percentage of oxygen would you use?

Q.3

Take a look at the six diving related disorders below; indicate whether or not the disorder is:

Immediate or gradual onset - a or b and due to an increase or decrease in ambient pressure, c or d

A = immediate in onset

B = Gradual in onset

C = Due to a decrease in ambient pressure

D = Due to an increase in ambient pressure

The first one has been completed for you:

|  |  |
| --- | --- |
| Cerebral Embolism | AC |
| Surgical or interstitial Emphysema |  |
| Decompression Sickness |  |
| Chronic Pulmonary toxicity |  |
| Ruptured ear drum (middle ear Barotrauma) |  |
| Narcotic effect of nitrogen narcosis |  |

Q.4

List four reasons why it is ill-advisable to enter a decompression chamber

Q.5

Read this account of treatment given for a diving related illness and the key personnel involved. Complete the account using the number of the relevant operative. You may use some numbers more than once and not all the personnel listed are involved. You should read the account a couple of times before filling in the blanks. We've done one for you:

1. (Onshore) Diving Medical Specialist

2. Liaison Officer

3. Diver Tender

4. Diver Medic

5. Diving Supervisor

6. Offshore Medic

Following a dive, a commercial diver reported symptoms, strongly suggestive of decompression sickness, to his 5 . As a result of considering these symptoms, the \_\_\_\_\_\_\_ instructed the diver to enter the recompression chamber. The diver was accompanied by a \_\_\_\_\_\_\_ (who was only First Aid trained). A \_\_\_\_\_\_\_\_\_\_\_\_ was not part of the diving team so the\_\_\_\_\_\_\_\_\_\_ was asked to attend. The \_\_\_\_\_\_\_\_\_\_obtained a history from the diver via the chamber intercom, passed some examination equipment to the \_\_\_\_\_\_\_\_\_\_\_ in the chamber and instructed him on how to examine the diver. With the information obtained, the \_\_\_\_\_\_\_\_\_\_ telephoned the\_\_\_\_\_\_\_\_\_ . Following this conversation, the \_\_\_\_\_\_\_\_\_ spoke with the \_\_\_\_\_\_\_\_\_\_ about the recompression and then gave the \_\_\_\_\_\_\_\_\_\_\_ advice about medical treatment.

Answers to questions 1-5

Write the numbers in the spaces provided:

Answer to Q.1

|  |  |  |
| --- | --- | --- |
| Commercial | Both | Recreational |
| 1  7  10 | 3  4  5  8  9  11  12  13 | 2  6  14 |

1. Lead boots 8. Ascent time

*2.* ABLJ 9. Bottom time

3. Scuba gear 10. Diving chamber

4. Weight belt 11. Oxygen

5. Time 12. Stops

6. Face mask 13. Pressure/volume changes

7. Helmet 14. Demand valve

**Q .2**

*The partial pressure of oxygen in a deep diving system is maintained at 0.4 ATA. The system is diving at 90 metres. You have to mix oxygen and helium to provide the correct ppO2. What percentage of Oxygen would you use?*

Answer 2

At 90 metres depth the pressure = (9 X l) + 1 = 10 ATA

Therefore this pressure = ppO2 + ppHe

Therefore 10 ATA = 0.4 ATA + 9.6 ATA

Expressed as a % the oxygen partial pressure = 4%

Answer =4%

**Q.3**

*Take a look at these 6 diving related disorders. Indicate whether or not the disorder is:*

*Immediate or gradual in onset -A or B, and*

*Due to a decrease or an increase in ambient pressure, C or D.*

*A Immediate in onset.*

*B Gradual in onset.*

*C Due to a decrease in ambient pressure.*

*D Due to an increase in ambient pressure.*

**Answer to Q.3**

|  |  |
| --- | --- |
| Cerebral embolism. | A C |
| Surgical or interstitial emphysema | A C |
| Decompression sickness | B C |
| Chronic pulmonary toxicity. | B D |
| Ruptured ear-drum (middle ear barotrauma) | A D |
| Narcotic effect of nitrogen narcosis. | B D |

**Q.4**

*List 4 reasons why it is inadvisable to enter a decompression chamber.*

Your answer should include four from the following:

1. Everyone should have a special medical examination prior to going under pressure.

2. You may not be able to relieve the extreme discomfort in your ears as you go under pressure.

3. You may be unable to think clearly, and you should make no decisions whilst under pressure.

4. You may suffer with claustrophobia.

5. You are exposing yourself to the risk of developing a diving related illness.

6. You cease to be of use where you are most needed, that is, outside the chamber.

**Remember: Avoid entering the chamber at all costs...**

**Answer Q.5**

Following a dive, a commercial diver reported symptoms, strongly suggestive of decompression sickness, to his **5** .As a result of considering these symptoms, the **5** instructed the diver to enter the recompression chamber.

The diver was accompanied by a **3** (who was only First Aid trained). A **4** was not part of the diving team so the **6** was asked to attend.

The **6** obtained a history from the diver via the chamber intercom, passed some examination equipment to the **3** in the chamber and instructed him on how to examine the diver. With the information obtained, the **6** telephoned the **1**.

Following this conversation, the **1** spoke with the **5** about the recompression and then gave the **6** advice about medical treatment.