

Chapter 7

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STRESS DISORDERS, PANIC & FATIGUE

INTRODUCTION

The diving equipment and facilities of the 1950's and 1960's were often spartan and the divers were to some extent influenced by the difficulties produced by this equipment and the environment. Diving was not easy, safe or comfortable and only the dedicated few were involved in the sport. The divers who survived tended to be capable and well adapted to the environment. They were “water people”.

The advent of more user-friendly equipment, together with the marketing and general popularity of diving, has seen the introduction into the sport of some divers who are less naturally suited to the environment. These divers may be more prone to **stress syndromes** when confronted with some of the threatening aspects of the marine world.

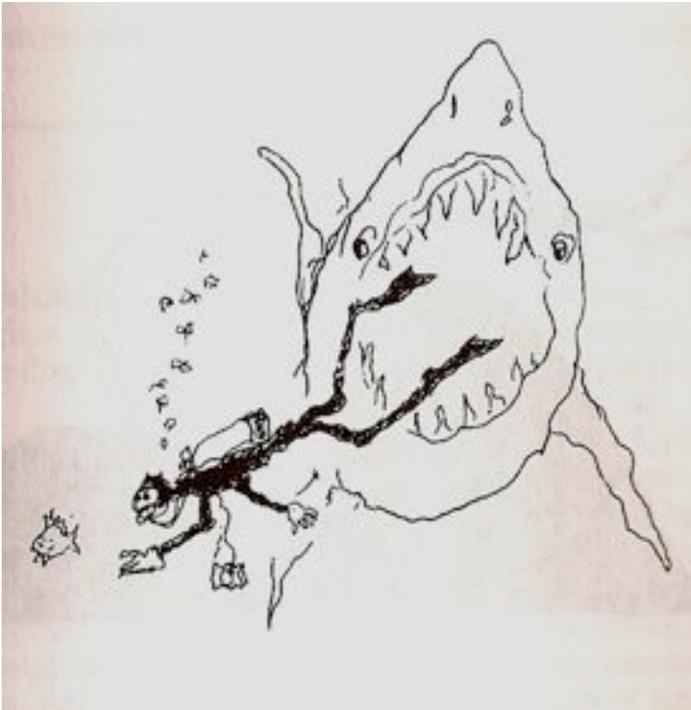
Some of the factors influencing the divers ability to cope with the diving equipment and environment will now be considered.

PERSONALITY FACTORS

Some personalities are better suited to scuba diving than others.

Military diving requires exacting physical and psychological standards and this is reflected in the high failure rate, generally about 50%. Many professional diving courses have a similar requirement and failure rate. This prompted researchers to look at the personality characteristics of successful trainees in an attempt to select out those who were not suitable.

In general, successful military divers were psychologically stable, not anxious about the dangers of diving, intelligent, practical, physically fit, self sufficient, good swimmers, capable and confident in the aquatic environment.



There is little data available for features which characterise successful and safe recreational divers. While the exacting requirements of a military diver probably are not as necessary, it would seem likely that similar characteristics would be shared by the most competent divers of both groups.

Fig. 7.1

Although there is a high failure rate with military and commercial diving courses, the failure rate in many recreational diving courses is close to zero. The standards set by some diving organisations is a source of concern, as it is possible that they may be overly influenced by commercial considerations. Between 5–10% of deaths in recreational divers occur while under training. Possibly this is the result of a combination of unsuitable people being trained in an unsafe manner. It is uncommon for a trainee to accept that he is not suited to diving, or for a diving organization to admit to less than ideal teaching methods.

STRESS RESPONSES

We all have an inbuilt automatic response to threats in the environment. This involves activation of the nervous system which prepares the body to confront the challenge or flee – the so called "**fight or flight**" response.

When this response is triggered, the sympathetic nervous system releases adrenalin into the body, stimulating the heart, increasing blood flow to the muscles, alerting the brain and increasing respiration. For example, a person suddenly confronted by a mugger is automatically primed to fight or run away. If the mugger is armed, the sensible victim usually considers the safest option is to quietly hand over money. This is an intellectual decision appropriate for survival and overrides the autonomic response. Logic can over-ride emotion.

Some divers may respond to certain levels of stress in ways inappropriate to survival. These potentially dangerous stress responses are :

- **Panic** – a psychological stress reaction characterised by excessive anxiety
- **Fatigue** – a physical stress response to exertion
- **Sudden Death Syndrome** – a lethal cardiac response to stress (see Chapter 35).



Fig. 7.2

PANIC

Panic is probably the most common contributor to death in recreational scuba diving. Studies have implicated panic as a contributor to between 40–60% of such diving deaths.



Fig 7.3

Panic is an extreme and inappropriate response to a real or imagined threat. Behavioural control becomes lost. Some readers will have experienced, or been near to, panic in some real life situations.

In general, the more naturally anxious a diver is, the more likely he is to panic.

As panic develops, the capacity to think rationally and solve the emerging problem deteriorates. The diver becomes more and more narrow minded and eventually may focus on only one goal e.g. reaching the surface – to the exclusion of other vital factors, such as exhaling during ascent.

Consider the following scene, which has been gleaned from several diving fatalities, to illustrate some of the factors contributing (in *italics*) to a panic-related death.

Case history.

Harry was a recently qualified diver who had *borrowed* equipment to undertake an open ocean dive in an *unfamiliar* area. His borrowed wetsuit was a little *tight* around his chest, restricting his breathing.

He decided to use two *extra weights* on his weight belt to help him descend in the ocean conditions, which were somewhat foreign to him. He was *inexperienced* at open ocean diving and the conditions were regarded as marginal so he felt a little *uneasy* about the dive.

His companions were more experienced than him and he was unsure of his ability to make his *air supply* last as long as his buddies. After all, he did not want to be the first to run out of air and force his buddies to shorten their dive.

During the dive he was sure he was using more air than the others but he had no way of checking this as his borrowed scuba set did not have a *contents gauge*.

He became a little more *apprehensive*. They seemed to have swum a long way both from the dive boat and the shore. But he did not want to *inconvenience* his buddy or *embarrass* himself by ascending and checking his distance from shore or inquire about his buddies air supply. He had no idea how much air he had left but he felt that there probably wasn't much.

He became a little more *anxious* and his *breathing rate* increased. He noted some *restriction* to breathing. Was this just *resistance in his regulator* or was he now running out of air?

He activated his reserve valve. Perhaps this would improve the restricted gas flow. It didn't.

There was a tidal current running, which slowed their progress to the planned end of the dive – the safe exit point.

He was hoping that his companions were also running *out of air*, as he appeared to be.

He was becoming more *anxious*. His heart was pounding and his *breathing rate* was increasing. It was becoming harder to get sufficient air from his demand valve.

The difficulty in obtaining enough air settled the matter. He decided to get to the *surface*, fast. In spite of his rapid ascent, he still did not seem to be getting more air from his demand valve. He must be out of gas.

He burst through the surface, gasping for breath. He wrenched off his *face mask* and *demand valve* and gasped air.

The water was choppy and waves washed over his face. He kicked hard with his *fins* to stay on the surface. One of the ill-fitting borrowed fins came off. A wave washed over his face and he *inhaled water* and started coughing. It was a real *struggle* to stay on the surface, he was becoming *exhausted*. He wondered how long he could keep this up. He tried to keep his head well above the waves, but could not.

His buddy noticed he was missing and after a brief search, surfaced. Harry was no where to be seen. An organised search later found his body on the bottom, immediately below where he had surfaced.

His *weight belt* was still fastened, his *buoyancy vest* uninflated. There was ample air in his cylinder and testing of his demand valve revealed normal functioning, but demonstrating the usual resistance with high gas flows.

The autopsy report read "**drowning**". The **real cause was "death from panic"**.

The above story illustrates some of the factors which combined to develop the anxiety which leads to panic and illustrates the irrational responses in a panicked diver. An appropriate logical response at any one of the steps that led to the disaster, would have prevented or relieved the situation.

Prevention.

If anxiety is an important precursor to panic, reducing anxiety is an effective counter measure. The most effective way to reduce anxiety is to have confidence in, and familiarity with, the task. This is achieved by **knowledge, training** and repeated **practice** of diving and safety procedures.

A good example is seen in the training of commercial airline pilots. They are required to fly a minimum number of hours per month and to practice and demonstrate emergency procedures at regular intervals. They spend many hours practicing emergency drills in a flight simulator. The usually cool and appropriate performance of these professionals in emergencies is a testimony to the success of this approach.

Another important preventive measure is for the diver to know his **limitations** and to dive within them. A diver may be comfortable, confident and competent in one diving situation but not in another. The first allows for safe diving, the second for a panic scenario. Panic is more likely when the diver is extending his dive parameters, especially if without competent training and supervision.

Treatment.

This is not as effective as prevention.

It takes as long to die from panic as it does to stop, assess the situation and consider the options. Once a panic situation starts developing, the diver may take some actions to suppress it.

If there is no apparent reason for the panic, just visually concentrating on equipment or undertaking tasks will reduce the anxiety level (this counters the sensory deprivation influence, see above). Communicating with others may not only reduce anxiety, but also summon assistance.

For the diver assisting, it is usually prudent to ensure their own safety and equipment integrity, as a priority. Keeping eye contact may be reassuring as one approaches the panicking diver, Offering the spare regulator may avoid the need for the panic diver to grab for the rescuers' primary one. Under those circumstances, it may be possible to ascend in a controlled manner, with ones hand on the panicking diver's shoulder, or by grabbing the diver's harness.

In a more threatening situation, taking an arm and turning the victim, so that the rescuer is behind (and so safe from grasping hands) is preferable. Ditching the victims weights, inflating the buoyancy compensator or using buoyancy from the rescuers own equipment, in that order of preference, will ensure the required ascent to the surface, appropriate to most situations.

It is of interest that in 85% of the instances of panic not resulting in death, the victim does not do an uncontrolled dash to the surface - implying the efficiency of advice given during training. The incidence of such an uncontrolled ascent amongst those who die, is not know.

There are many other aspects of diver rescue that should be learnt by all divers. The diver instructor organisations have excellent rescue diver courses that, with regular re-training, should be required by all divers.

FATIGUE

Studies of recreational diver deaths show that **fatigue contributes in about 28% of cases**. This fatigue comes about from a combination of personal, equipment and environmental factors.

- **Personal.**

A high level of physical fitness is an important survival factor in diving. Even the calmest water dive can degenerate into a situation requiring maximal physical exertion due to unforeseen circumstances, such as currents, rescue requirements, etc.

During severe exertion, fatigue and its associated apathy will come sooner to physically unfit divers. Also, fatigue is experienced sooner by anxious or neurotic divers.

As a general rule, scuba divers should be able to swim 200 metres in < 5 minutes, without equipment. A fit diver will complete this in 4 minutes and a very unfit diver may take over 5 minutes.

- **Equipment.**

Much of the diver's equipment, the buoyancy compensator, tank, facemask, and wet-suit either increases resistance to swimming or restricts movement. Excessive weights make swimming more strenuous. Even the best regulators have appreciable resistance to airflow at high flow rates, significantly restricting breathing. All these factors accelerate fatigue.

- **Environment.**

Fully equipped, a diver cannot swim for long against a current of more than about 1 knot (see chapter 6). Rough water and cold exposure will make this even harder.