
Keeping Your Cool, Part III

Exertion, anxiety, and how to forestall panic

This is the conclusion of our three-part series on panic, digesting the work of Dr. William P. Morgan, Professor and Director of the Sports Psychology Laboratory at the University of Wisconsin-Madison.

Panic behavior — that is, irrational behavior — that leads to diving accidents and fatalities can be fueled by heavy physical activity leading to hyperventilation. In fact, breathing rate can be a major source of stress in the diver.

Researchers Art Bacharach and Glen Egstrom say that respiration rate is an index of exertion level. Monitoring breathing patterns and rates is often the primary consideration used by surface personnel to determine diver status when listening to a communication link. Erratic or rapid breathing sounds become an alarm, causing the monitoring

personnel to check on the diver's well-being.

Researcher Tom Griffiths says that respiration rate may also be a good indicator of anxiety. However, there is some evidence that divers with generally high levels of anxiety may actually breathe slower than those with low anxiety. This "underbreathing" may cause CO₂ retention, which may induce panic.

In everyday life, hypnosis, imagery, and relaxation help individuals manage anxiety by reducing muscle tension. It seems logical they would relax anxious divers and therefore reduce the likelihood of panic; so far, however, evidence doesn't support this.

Tom Griffiths found that relaxation training was effective in reducing perceived anxiety in beginning scuba divers, but he

didn't find the expected physiological changes in heart rate or respiration rate. Furthermore, relaxation training may actually produce anxiety and panic attacks in certain individuals, so interventions to relax divers should not be taught in a casual manner.

While it would seem that self-hypnosis might help one cope with stressors such as cold temperature, the data suggest otherwise. For example, researchers studying the influence of self-induced hypnosis during immersion in 25°C water hoped to relax divers to enhance their ability to cope with the cold. The divers did relax and had an enhanced perception of greater warmth. However, physiological measures found that some of these divers actually had increased heat loss, perhaps because the relaxation and images of warmth suppressed shivering and reduced heat production.

In concluding my study, I wish to say again that the diving community as a whole should not downplay the risks of recreational scuba diving. More than a hundred U.S. divers die each year and many more are injured. Irrational panic behavior in beginners as well as experienced divers is a primary reason for these injuries and fatalities. Divers must learn to monitor their anxiety and exertion to reduce the likelihood of overbreathing or underbreathing that induces panic.

Dr. William P. Morgan's work was funded by the University of Wisconsin Sea Grant Institute and federal and state grants. We thank the Journal of Sports Medicine for permission to excerpt. A full reprint, with footnotes, may be ordered from Dr. William P. Morgan, Sport Psychology Laboratory, Department of Kinesiology, University of Wisconsin-Madison, 2000 Observatory Drive, Madison, WI 53706 (608-262-7737, fax 608-262-1656, e-mail sportpsy@macc.wisc.edu).

Clearing Your Ears

inner ear. Oddly, it has even caused death from pulmonary and aural barotrauma, cardiac arrhythmia, and hemorrhage.

There's a safer alternative, says Dr. David Taylor in the *Journal of the South Pacific Underwater Medicine Society*. Called the Frenzel maneuver, it involves closing the mouth and nose, both externally and internally (by closing the glottis), then contracting the muscles of the floor of the mouth and the pharyngeal constrictors. The elevated tongue can be used as a piston to compress the air trapped in the nasopharynx and force it into the Eustachian tubes.

Taylor says it's often performed subconsciously by the more experienced diver or learned by novice divers as a modification of a deliberate swallow, itself a safe and often effective technique used to equalize middle-ear pressures.

Yet another technique is to hold one's nose, shut one's mouth, then blow gently and swallow while blowing.

B. D.

When you pinch your nose, close your mouth, and increase the pressure to clear your ears, you're performing what docs call the "Valsalva Maneuver." Done too forcefully or for too long, it can damage the middle and