DEEP WATER DIVING INFORMATION

DS (Decompression Sickness) and USE OF THE DIVE TABLES

Many divers believe that the dive tables commonly used in the United States for sport diving are designed to be conservative and have built in safety margins. They also assume that dives made within the no-decompression limits of time and depth are always safe for all divers. It should be noted, however, that these tables are reproductions of the United States Navy Dive Tables, arranged in a more convenient format.

The Navy developed these tables for use by Navy divers and they were never intended for use by sport divers. However, in the absence of suitable alternatives, the Navy tables have become the standard for sport diving, It is not surprising then, that a number of sport divers have suffered DS, which can be attributed to the aforementioned erroneous assumptions.

Fortunately, experts in diving medicine have identified a number of variables that increase the possibility of DS. With a thorough understanding of these variables, sport divers can plan safe dives.

DS RISK VARIABLES

AGE - After age 3O, the human body gradually becomes less efficient. In addition to the obvious erosion of physical abilities, subtle but important changes in blood chemistry occur which makes older divers more at risk.

SEX - For reasons not fully understood, female divers have suffered a higher incidence of DS. Natural subcutaneous fatty tissue is thought to be an important factor

CARDIO-VASCULAR FITNESS - At rest, the “out of shape” diver is significantly less able to cope with the physiological demands of deep water. This deficit increases dramatically as physical activity increases.

EXCESS BODY FAT - As the percentage of body fat increases, so does the risk. Fatty tissue attracts and stores nitrogen more so than other tissue types, and inhibits the off-gas process.

PRE-DIVE WELLBEING - Seasickness, fatigue, lack of sleep, hangovers, use of drugs including alcohol and smoking, a recent illness, excess or sub-normal body heat, all increase the risk of DS.

INJURIES - Both recent and older injuries disrupt the blood circulation and inhibit the off-gas process. Injuries to the joints of the body should be of special concern.

PHYSICAL STRESS - Exertion before, during, and after the dive inhibits the off-gas process. Hard swimming against a strong current is a common mistake. Hot baths, saunas, hot tubs, and Jacuzzis after a dive also inhibit the off-gas process. Rest for several hours after a deep dive is important.

PSYCHOLOGICAL STRESS - Anxiety, fear, worry, and other stressful emotions cause physiological changes that increase the risk of DS. Inexperienced divers seem to be most susceptible.

HYPOTHERMIA - Loss of body heat before, during, and/or after a deep dive can cause higher risk of DS. Cold water and cold weather diving are additionally hazardous for this reason as well as others.

MEDICAL HISTORY - Major surgery, serious illness or injury, a chronic condition, should be discussed with a physician familiar with diving medicine. Annual physical examinations are recommended.

DEHYDRATION - The low moisture content of compressed air in SCUBA tanks, the diuretic effect of salt water, the increase of perspiration due to air temperature or use if wet suits, the diuretic effect of caffeine in coffee, tea, and many soft drinks, the consumption of alcoholic beverages, and many over the counter drugs can deplete the body fluids to a level that is dangerous divers.

INADEQUATE PREPARATION - Combinations of the lack of knowledge, lack of training, a daredevil attitude, carelessness, inexperience, neglected dive planning, poorly maintained and inadequate equipment can directly or indirectly increase the risk of DS.

REDUCED ATMOSPHERIC PRESSURES - Flying after diving can complicate the off-gas process. Experts have not yet agreed upon a practical guideline short of waiting 24 hours. Consult your divemaster.

RESTRICTIVE BANDS - Equipment or clothing which restricts the blood circulation can inhibit the off-gas process. Common examples are excessively tight wet suits, straps for buoyancy compensators, knives, gauges, watches, etc.

This list of variables is not intended to be all inclusive, only to increase the diver's awareness of this concern. Some of the variables can be minimized or corrected, others can not. All should be considered carefully. Each diver should assess his or her risk level based on all possible risk variables during pre-dive planning. Adjustments to the dive tables should be based on each person's risk level and a part of the dive plan.

Recommended Table Adjustments

First - Subtract between 20 and 40% from the no-decompression limit of time for a given depth and use that time for your limit.

Second - Add a safety stop for decompression to your dive plan. Dr. Bruce Basset, USAF Medical Officer, recommends that "divers do a safety stop of three to five minutes at three to five meters* on all dives below 30 feet." (Skin Diver magazine, May, 1987, p. 84) Most experts in diving medicine concur and emphasize the importance.

* (three to five meters is the equivalent of 9.8 to 16.4 feet)

Technical sources - The U.S. Navy Diving Manual, The NOAA Diving Manual, The New Science of Skin and SCUBA Diving, The PADI Advanced Dive Manual, The YMCA SCUBA Leadership Manual, Dr. Bruce Basset, USAF Medical Officer, Dr. John Knight, diving physician, Skin Diver magazine - May 1987, Strykowski's Diving for Fun.

This information courtesy of The Active Divers Association Diving Safety Committee